

RECORD

15111-22267 R 200

F. R. Fosberg  
Collection

### Задачи и упражнения

Field and Collection Note Book

No. 45

(June 4, 1956 - June 24, 1956)

(37262 -- 37736)

RYUKYU ISLANDS

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F. R. Fosberg  
Collection Book  
No. 45  
begin with #37262  
end with #37726



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A BOORUM & PEARCE PRODUCT

Ishigaki  
Taketomi

Ishigaki

1

June 4 - above Inota

(40) (Photo 950-54)

Secondary scrubby forest,  
dense, full canopy,  
lianas abundant,  
esp. *Flagellaria* + *Drimia*.  
Trees mainly secondary  
species - *Ficus*, *Macaranga*,  
*Mallotus*, *Diospyros*,  
*Camellia*, *Ardisia*,  
*Schefflera*, *Trema*. *Lasiandra*,  
Undergrowth of *Psychotria*,  
and abundant ferns,  
*Angiopteris*, *Tectaria*,  
*Polyphodium*, etc.  
especially in gullies.  
*Arenga* common.

Leeches abundant on  
dead sticks + leaves  
on ground.

(41) (Photo 950-54)

Dense forest of small trees not over 10 m. tall. *Quercus*, *Ficus*, etc.

~~Adisi~~, *Khumb* layer very  
marked *Lasiandra*,  
*Psychotria*, *Adisiq*, *Psychis*  
~~Lan~~<sup>and</sup> *Adi* *Adi* *Adi*  
*Myrtace*. Various other sterile  
shrub, ~~is~~ about  
2 m. tall, stems  
average 3-5 m. apart.  
Trees 2-5 m apart.

Few ferns, few lianes.  
Some Zingiberaceae.  
Almost no other  
ground cover.

Dead leaves over bare soil general. A few seedlings.

Much logging going on here, even of trees down to 10 cm. dbh. No obvious preference of species - *Itzchac*, ~~lauraceae~~, Lauraceae, etc. as well as *Quercus*, *Elaeocarpus*, etc.

Locally there are patches of several ferns, apparently spreading by running rhizomes, also of *Alpinia* sp.

But even where there is a slight gully or steep slope the fern ground cover becomes very abundant.

a few *Asplenium nidus*,  
on tree trunks, otherwise  
epiphytes confined to  
a few crustose lichens,  
algae etc one small fern.

But several close  
clinging vines, incl.  
*Psychotria serpens*,  
and one or two others  
are quite common  
running up into trees.

Tree trunks here quite commonly up to 3 dm. d.b.h., occasionally larger.

Additional trees in top  
layer *Artisia*, *Glaucarpus*,  
*Mysine*.

*Ficus* not abundant on ridge tops.

(42)

Deep gulch with small stream, huge boulders and some alluvium in bottom.

Trees here are 15 m. or even more tall, many kinds, incl. *Ficus*, *Cibotium*,

Ferns very abundant and many kinds *Angiopteris* and a small tree fern-like sterile species, a big *Polypodium*, *Thelypteris*, *Oxypteris*, etc.

*Arenga* common, also a big araceous vine and what looks like a *Hoya* but non-lactiferous, climbing on rocks.

Mosquitoes in great numbers (*Aedes*)

6

1954 Ryukyu Is.

Inoda yama, w. of m.  
June 4 - 1-1.5 km. 60° W. of N. of  
Inoda

7 deep wet wooded Inoda

37262

~~Ps. sp.~~ *Tectaria decolorans* (Presl) Copel.  
common on steep banks  
near along bottom of deep gash

3

*ophiorrhiza liukiuensis* Hayata

6

~~Ps. sp.~~

occasional in bottom of

5

*Psychotria liukiuensis* Hatusima?

occasional in bottom of

4

*Ficus ampelas* Burm. f.

common in

on rounded wooded ridge

1

*Ardisia quinquegona* Bl.

common

2

*Ardisia quinquegona* Bl.

common

6

*Ilex mucronata* Mak.~~one tree seen~~ *I. mucronata*

1

*Ardisia sieboldii* Miq. ?

5

70 (few) *Lemnaphyllum microphyllum* Presl

epiphytic on tree-trunks.

~~deep~~

1

*Lasiandra tashiroi* var. *pubescens*

rare

7

100-150 m.

"bird's nest" habit, sterile  
fronds spreading and  
ascending, fertile ones  
more erect.

shrub 0.7 m. tall;

flowers white.

shrub 1.5 m. tall,

flowers whitish

65 tree 15 m. tall 20 cm. d.b.h.  
somewhat buttressed.

200 m.

66 shrub 2 m. tall;

fruit immature

67 shrub 2-3 m. tall;

very young fruit red.

68 tree about 10 m. tall;

cut for timber, log  
about 15 cm. thick; flowers  
white.

shrub 1.5 m. tall.

flowers pinkish white,

anthers turning very

dark in age, punctate

when young and pinkish.

vine clinging  
very closely to tree-trunk.OK  
EHW

69

shrub 1.5 m. tall.

flowers pinkish white,

anthers turning very

dark in age, punctate

when young and pinkish.

small shrub;

Nakai veins glossy above.

70

(Matsum.)

71

37272 *Ilex goshiensis* Hayata  
6 one tree seen

3 73 *Korthalsella opuntiae* (Thunb.) Merr.  
parasitic on 37272

5 74 { *Castanopsis cuspidata* (Thunb.) Schott  
*Quercus cuspidata* Thunb.  
common

5 75 *Elaeocarpus japonicus* S. & Z.  
common (<sup>var. inornata</sup> Maxm.)  
*Dystylium racemosum* S. & Z.

6 76 *Daphniphyllum*?  
occasional

5 77 *Dryopteris varia* (L.) O. Ktze.  
common, especially in  
small ravines and depressions, terrestrial

5 78 *fern cyclosporus triphyllum* (Sw.) Copel.  
very common in patches,  
especially on slopes and  
in depressions, terrestrial.

5 79 *Alpinia chinensis* (Willd.) Roscoe  
common

5 80 *Styrax japonica*  
rare (<sup>var. inornata</sup> Maxm.)

5 81 *Randia*  
occasional <sup>Tanemura</sup>

tree about 10 m. tall,  
cut for timber; inflorescence  
~~poor~~ appear abnormal.

dark green, branchlets  
flattened "perpendicularly  
to ~~branch~~ plane of  
flattening of branches,  
but basal joint of a  
branchlet often terete.

tree 10-12 m. tall,  
cut for timber; leaves  
bronze beneath,  
fruit immature.

tree 10 m. tall, cut for  
timber, a few' leaves  
red; fruit immature.

tree 10 m., cut for timber.

running rhizomes  
forming patches.

~~flame~~ rhizome horizontal,  
aromatic when broken;  
flowers white, lip with  
2 deep pink stripes.

tree 8 m. tall 12 cm. d.b.h.  
cut for timber.

shrub 2 m. tall,  
flowers white.

same *Syzygium buxifolium* H. & A.  
 37782 *Eugenia microphylla* Abel  
 5 occasional

5 83 *Ardisia quinquegona* Bl.  
 common

5 84 *Psychotria* *P. rubra* Poir.  
 very common, making up  
 a large part of shrub layer

3 85 (orchid) *Stereosandra koidzumiana* Ohwi (= *S. javanica* Bl.)  
 Det. L. A. Garay  
 very local, one colony seen

5 86 *Psychotria serpens* L.  
 common, climbing in  
 trees

5 87 (laurel) *Daphniphyllum teijsmanni* (var. *ohimawense*  
*Harusawa*?)  
 occasional

5 88 (fern) *Hemitelia decurrens* (Hornb.) Copel.  
 same rail in small draw

2 89 *Callicarpa riomotensis* Masam.  
 occasional in ravines

2 90 (laurel) *Machilus thunbergii* S. & Z.  
 occasional

7 91 *Myrsine seguinii* Lév.  
 common

5 92 *Flex goshiensis* Hayata  
 occasional

2 93 *Antidesma*  
 occasional

5 94 *Flex goshiensis* Hayata  
 occasional

150-175m.

shrub 2 m. tall,  
 flowers with white stamens

shrub 2.5 m. tall;  
 fruit immature

shrub 2 m. tall; flowers  
 greenish.

erect, stems whitish  
 from a fleshy tuber; flower  
 parts purple-tipped.

young vines very  
 closely appressed to  
 tree-trunk, growing up  
 from ground, ramifying  
 in upper branches of  
 trees; flowers pale greenish.

tree 6 m. tall, fruit  
 immature.

shrub 2 m. tall,  
 fruit immature.

small tree sterile;  
 leaves glaucous beneath.

tree 8 m. tall; fruit  
 immature

small tree;  
 fruit immature

shrub 1.5 m. tall,  
 fruit immature.

small tree  
 fruit immature

37295 *Dendropanax*

3

(in deep wet wooded gulch

1 96 ~~for~~ *Bolbitis subcordata* (L.) Ching

rare

1 97 *Trichomanes* <sup>*cupuliforme* javanicum (Bl.) van der</sup> Bosch

local, on vertical clay bank

2 98 *Asplenium* <sup>*unilaterale* L.</sup>

local, on vertical clay bank

3 99 *Randia*? <sup>*R. canthidea* Champ.</sup>

occasional

June 5 - south of base  
of Maishi Take(47) Chert outcrop in semi  
cultivated area. It has  
been burned over not  
too long ago.Between the chert boulders  
are areas of grass - partly  
*Imperata*, partly *Paspalum*,  
*Andropogon*, etc.On the rocks is a  
scrubby woody vegetation  
of *Ficus*, *Toddalia*, *Mallotus*,  
*Euphorbia* (?), *Melia*, *Psidium*,  
*Boehmeria*, *Pongamia*?,  
*Arenaria*, and  
one or two other shrubs,  
clumps of *Miscanthus*,  
and *Polypodium*,  
*Scolopendria* and  
*Nephrolepis*, *Dianella*

96 fertile fronds erect

97 dark green.

98 small tree or large shrub.  
fruit immature.Tangled in this are  
*Jiti*, *Asplenopsis*, *Imilex*,  
*Zanthoxylum*, *Alyxias*?  
*Pueraria*, *Lycododium*,  
a thorny trifoliate vine,  
and *Hoya*.Some *Rubus*, *Cyperus*,  
*Thelypteris*, *Lilium*  
*longiflorum*, *Pittosporum*,  
*Lauraceae*?, *Rosa*,  
and *Agave Americana*.  
*Murraya*, *Prunus*, *Camassia*,  
*Ixales*, *Emilia*,  
*Leucas*, *Letaria*, <sup>(Melast.?)</sup>  
*Gymnura*, *Conyz*, *Paspalum*,  
*Wahlenbergia*, *Andropogon*,  
*Artemisia*.Paddy fields abandoned  
or fallow & have that  
of *Mariscom*.

June 5 - Chest hills  
above Waterworks.

(44) Unburned chest  
outcrops.

Few species noted  
here that were not  
on the burned hill -  
*Polygala*, *Viola*,  
*Polypodium thunbergii*,  
*Polygonia serpens*,  
*Vernonia cinerea*,  
*Nephrolepis exaltata*,  
but everything is  
much more luxuriant.  
Less weeds, grass thicker  
around base.

Abandoned or fallow  
paddy fields nearby  
are covered by a pure  
stand of *Panicum*.

Well up the slope *Dendro-*  
*panax*, then *Quercus*, comes  
in. *Podocarpus* general  
but only saplings.

June 5 - just south of  
base of Maishi Take.

small hill of chert,  
with bare rocks and  
bushy vegetation.

37300 *Polygala japonica* Hemsl.  
in rock crevices

1 01 *Viola*  
at base of rock face

3 02 *Polyptilon thunbergianum*  
in crevices on rock face

same - roadside

2 03 *Echinochloa hispida* (Pursh) Keng det. in flower  
in thick grass

5 04 *Vitis trifolia* var. *heterophylla* (Mak.)  
on steep bank

7 05 *Ficus erecta* Thunb.  
on steep bank

June 5 - 1 km. S.E. Maishi Take

roadside thicket

5 06 *Ficus septica* Burm. f.  
common

5 07 *Acacia confusa* Merr.  
abundant, probably planted  
along shallow ravine

3 08 *Cerbera manghas* L.  
common

80 m.

40 m.

17300 04 shrub 1.5 m. tall,  
flowers violet.

05 shrub 2.5 m. tall,  
ripe figs red, mostly  
immature.

40 m.

06 low bushy tree 6 m. tall,  
figs immature.

07 low tree 3 m. tall (others  
to 6 m.), trunk crooked,  
flowers yellow, fruit immature.

08 small tree, flowers  
white, center red, to calyx  
pale green, tube slightly  
dilated only near top.

same - small  
chert outcrop with  
some soil.

37309 5 *Conyza*. <sup>Verbenaceae</sup> <sup>annual (?) 60cm</sup> common on soil

5 10 *Emilia sonchifolia* (L.) DC. common on soil

5 11 *Cyperus distans* L. f. <sup>OK 2 ft 10cm</sup> common soil

5 12 *Ficus superba* var. *japonica* Miq. very common

1 13 (grass) *Petrichilia glabra* (Roxb.) A. Camus rare

6 14 *Ampelopsis brevipedunculata* (Lam.) - <sup>maximowiczii</sup> <sup>(Engel.) A. Nels. (?)</sup> very common climbing on rocks and bushes

5 15 *Mallotus japonicus* M.-A. common on rocks

3 16 *Nephrolepis biserrata* (Sw.) Schott common on rocks

5 17 *Polypodium scolopendria* <sup>Thunb.</sup> common on rocks

3 18 *Polypodium scolopendria* Burm. f. common around base of rocks

5 19 *Exodias* <sup>Fagopyrum nitidum</sup> (Roxb.) (= *Xanthoxylum nitidum* Roxb.) common climbing over rocks

2 20 *Hoya carnosa* (L.) R. Br. common, climbing on rocks.

45 m.

erect

10 base of stem purplish; flowers purple, little exceeding involucre.

11 erect culms scattered, solitary

12 shrub 2 in. tall, mostly sterile at this season.

13 <sup>A. Nels.</sup> <sup>erect, on fertile culm,</sup> <sup>several tillers.</sup>

14 vine, flowers greenish, petals very caducous, fruit blue when ripe, mostly immature.

15 shrub 1-1.5 m. tall, leaves green beneath except when very young

16 fronds plane, leathery, pendent

Burm. f. <sup>prob. same as #37318</sup> probably same as #37318 but dwarfed by unfavorable habitat.

17 fronds erect

18 scrambling shrub, strong odor when broken.

19 prostrate vine, leaves very fleshy, flowers white with red center, waxy-fleshy.

20

1956 Ryukyu Is.

37321 (apoc.) *Trachyspermum indicum* (Nels.)  
common on rocks

3 22 *Raphiolepis indica* (Koch) Nels.  
common on rocks

5 23 *Bauhinia japonica* Makino  
local on rocks

same - weedy cultivated  
sweet-potato patch.

1 24 *Euphorbia hirta* L.  
occasional

5 25 *Setaria viridis* (L.) Beauvois  
rare

3 26 *Daucus carota* L.  
occasional

2 27 *Digitaria chinensis*  
occasional <sup>or</sup> *D. indica* Link

3 28 ~~Wheat~~ <sup>Orthosiphon</sup> *reuteri* (Thunb.) H. & M. ?  
occasional

5 29 *Ranunculus esculentus* Miq.  
common

5 30 *Digitaria pectinata*?  
common <sup>or</sup> *D. corymbosa* (?) Scop.  
L. Benth.?

TOKIGAMI ISLAND

21

scandent or semi-scandent  
shrub, lactiferous, mostly  
sterile

erect shrub  $\pm$  1-1.5 m.  
tall, fruit immature.  
scandent shrub,  
flowers pale yellow.

40 m.

0 ft.

sub A.  
clad.

OK SHW

sub A.  
clad.

purple

spreading, caespitose,  
erect, flowers white  
culms spreading

\* fragrant when  
broken; flowers pale lavender.  
stoloniferous; petals yellow

culms spreading,  
rooting at nodes,  
scapes somewhat ascending

mts. 1-2 km. SW.  
June 6, 1956. of Kabira

(mos. 45-62 on photo 950-65)

lower slopes mixed  
small pine and various  
secondary shrubs and

(45) small trees. In more  
open places *Miscanthus*  
is common but not  
very dense. Much  
*Pteridium*, *Elephantopus*  
*mollis*.

(46) Pines become thicker,  
especially saplings,  
upward. When  
sharp ridge is  
reached, of granitic  
boulders, the N.W. side

(47) is covered by a scrub  
forest 3-4 m tall of  
slender trees of  
various kinds.  
On ridge itself the  
same, with some  
mud-pine, cycads, pine, *Pandanus*.  
On other side, pines.

(48) Ridge with tangled  
low vegetation - pine  
fir, etc. difficult  
to traverse even constantly  
using machete. Much  
*Lycopodium*, some *Miscanthus*

small yellow jacket  
nest. The insects do  
not seem to be bothersome  
until the tree the nest  
is on is touched. Then  
sting viciously.

(hadzer Y) (Chalchi J)  
Usually 2-3 wasps on nest sending.)  
Mosquitoes present  
on ridge, rather aggressive.  
A small black species.  
also an *Aedes*. Possibly  
breeds in *Pandanus* axils.

Most common tree  
in broadleaf scrub  
forest is pinnate leafed  
or with 3 follicles.  
Hanging caterpillar "yamapi"  
said to like this tree.

From  
Pine  
Hill to  
Mt. N.  
N.

Upward on N.W. slope,  
scrub forest gets a bit  
taller, perhaps ~~to~~ 5 m.  
canopy dense. Shrub  
layer fairly well  
developed, almost  
nothing on ground,  
a few ferns & sedges &  
seedlings.

Can be walked thru  
with little use of  
machete in places.

"yamagi" seen on  
*Cinnamomum* rather  
 surrounds twig, is  
 brown, & rows of black  
 and yellow specks on  
 back, sparse short  
 black bristles, longer  
 stiff bristles pointing  
 downward on legs,  
 seeming to help cling  
 to twig.

50 In very rocky ground  
 stature of scrub is lower  
*Eurya*, *Eugenia*, other  
 conidious esp. plants  
 more prominent.

52 <sup>at side ridges</sup>  
 near top of <sup>at side ridges</sup>  
 becomes lower scrub  
 thicker, 2-4 m. tall.  
 trunks 2-5 cm. thick.

51 Taller & larger trees  
 in shallow draws.

700 m. 52 In first main top the  
 vegetation is a dense  
 scrub about 4 m. tall.  
 Many species, including  
*Mysore* (or *Ternstroemia*)  
*Ficus*, *Dendropanax*,

*Cinnamomum*, *Eurya*,  
*Eugenia*, *Cladagrus*.

53 On broad flat ridge  
 west from this is a  
 forest 5-7 m. tall, trees  
 up to 20 (- rarely 30) cm. mostly  
 up to 10 cm. full canopy,  
 sparse shrub layer,  
 many species of trees  
 & shrubs. *Garcinia* epiphytic  
 rare here. Trees 1-1.5 m.  
 apart. Some lianas,  
*Flagellaria*, *Smilax*, etc.  
 Ficus fairly abundant  
 on ground.

In places the forest is  
 largely *Ficus*, *Elaeocarpus*  
 (esp.), several *Canaceae*,  
*Camellia*,  
 in other places largely  
*Quercus cuspis*.

54 At about 200 m. or a  
 little higher *Pleiothlaspe*  
 comes in, at first  
 mixed with forest,  
~~etc~~ then forming  
 almost pure brakes.  
 A few old pines scattered  
 around edges and on  
 ridges in these brakes.  
 Canes finger size or smaller,  
 orange to greenish.

Clump forming but also with underground horizontal rhizomes, clumps coming from side branches from these, single culms also. Blade of culm sheath appressed and divergent on same culm.

These brakes are about 4 m. tall. They occur in patches on the ~~n.e.~~ sides of the high crests, but the highest peak has none, but is wooded all over. On high crest, the brakes are lower in stature, 1.5-2 m.

(55) 56 In the canyon behind Kabira are patches of bamboo down to 150 m or even lower. No pattern of distribution except that they are on ridges separated by wooded ravines. All have a few spreading umbrella-shaped pines.

Some low scrub in with bamboo near crests.

(59)

Main ridge to west seems to have better forest, but trees very gnarled and spreading.

57

In saddles the forest is about 10 m. high, trees up to 15-20 cm. dbh. many of them clusters of stump sprouts. Canopy full, but not dense, shrub layer well developed. Main canopy largely oak. It also forms a loose second story. Little on ground - a few ferns, terrestrial orchids, sedges, *Ligularia* etc.

(58)

In main draw leading up to west ridge and on ridge itself, mentioned above, trees to 15 m. and 3 dm. dbh. Many ferns on ground. Dense canopy. Ledges in bottom of ravine. Well developed shrub layer. Many species of trees, esp *Quercus* + *Elaeocarpus*. One tree seen 5-6 dm. dbh. 15-18 m. tall.

~~sight first~~ at head of small  
thorugh ridge of valley  
has thick forest  
about 6-7 m. tall.  
Many spp. incl.  
Dendropanax, *Lydisia*,  
etc. Tangled with  
*Freyssinetia*, *lunaria*,  
*Clacagnus*, *Flagellaria*, etc.

1. Slope of ~~valley~~ ridge not  
far from ~~valley~~ mouth - dense  
forest about 8-10 m.  
thigh trees mostly  
small, 10-15 cm. dbh  
occasional large  
Tress with compound  
trunks.  
Lianas, incl. *Entada*,  
abundant. Many  
ferns. Shrub layer  
very sparse.  
some *Alocasia*.

near the bottom  
of the valley ferns  
become abundant.  
*Maesa* and *Alocasia*  
common. Secondary  
species, as *Mallotus*,  
become dominant.  
Vines, esp. *Flagellaria*  
become more abundant

1956 To Ryukyu Is.

June 6 - about 1 km. s.w. of  
Kabira  
in steep trail in semi  
open vegetation

37331 *Mitraria* *pyramidalis* R. Br.  
2 very local

37331 a *Digyna* *pruinosa* (Thunb.) Buse  
in scrub forest on steep  
slope

2 32 *Citrus* *dejima* Hayata?  
wild

1 33 *Ligularia* *tussilaginea* (Burm. f.) Makino det  
*Farfugium* *tussilaginea* Walther 1970  
common *F. japonicum* [+] tabu

2 34 *Cinnamomum*?  
common *C. japonicum* Sieb. ex Thunb.  
ridge east of ~~Mae~~ Mae Take

June 6 - 1.5-2 km. s.w. of Kabira  
on high wooded ridge

1 35 *Ardisia* *caerulea* Sieb.  
occasional

2 36 (Tab.) *Macilosa* *thunbergii* S. & Z.  
occasional ~~now~~

5 37 *Elaeocarpus* *japonicus* S. & Z.  
common ~~in woods~~

5 38 *Ficus* *oreata* Thunb.  
~~common~~ occasional

5 39 *Elaeocarpus* *sylvestris* (Lam.) var.  
*oblonga* (Thunb.) Hara

1 40 *Pleioblastus* *lindneri* (Makino) Makino  
locally abundant on  
high crests and on patches  
on north slopes.

40 m. 31 flowers white

det. A  
slim

8100 m. 32 slender ~~shrub~~ small  
tree, 3-4 m. tall; fruit  
very immature.

125 m. 33 sterile "yama-gobo" (?)

34 sterile shrub, host for  
brown "yamagi" or  
stinging caterpillar.  
"shirotabu"

200 m. 35 small slender shrub  
0.8 m. tall; fruit immature.

36 small tree, sterile.  
"aha tabu"; bark used  
for "Okinawa incense".

37 tree 5 m. tall; fruit immature.

38 small slender tree 4 m. tall.

39 tree 3 m. tall.  
det. F A  
*Macrorhizum* (probably)

culm sheath forming dense brakes 2-4 m. tall,  
canes greenish to orange,  
blade of  
oblique  
divergent  
a dense  
on cane  
top  
solitary canes from branches on bottom  
of running rhizome.

32

1956 Ryukyu I.

37341 *Adiantum platyphyllum* L.  
common, terrestrial

✓ 42 *Adiantum* <sup>Lindnera</sup> <sub>commixta</sub> Tagawa  
occasional, terrestrial

7 43 sub *Trichomanes dubia* (Lindl.) Oliv.  
occasional

44 *Dendropanax*  
common

TSHTGAKT ISLAND.

33

petioles black

petioles green

tree 8 m. tall (others seen taller)  
fruit immature, seeds in cell.  
tree 3 m. tall, flowers  
green.

June 7 - above Yoshikawa  
(nos. on photos 950-112)

(63)

Forest in lower part  
of canyon above water  
holes

of *Ficus*, *Mallotus*,  
*Ardisia*, *Diplospina*,  
*Cyathea*, *Quercus*,  
*Wendlandia*, *Ischbefflera*,

tangled under growth  
of *Arenaria*, large  
ferns, diaceous vines,  
*Cesalpinia*, shrubs,  
etc.

(64)

At about 100 m. on the  
east wall of the gulch  
*Quercus* becomes dominant  
forming a loose forest  
18 m. or so tall with thin  
undergrowth. *Cyathea*,  
*Claoxylon*, *Ardisia*,  
etc. also common.

Terrestrial ferns,  
*Blechnum*, etc. common

On some gentler slopes  
a complete undergrowth  
of the diminutive tree  
fern, trunk 2 m. or less,  
fronds to 2 m. max. sections  
of trunk used as bases  
for house plants.

(65)

On a ridge coming  
down to west of this gulch  
*Quercus* is dominant  
in a drier type of forest  
10-12 m. tall.

A distinct second story  
5-8 m. tall formed of  
*Ardisia*, *Diplospina*,  
*Eugenia*, etc.

Florul' layer of  
*Psychotria*, *Lasiandra*,  
*Antidesma*, small  
*Cyathea*, *Eugenia*,  
*Angiopteris* etc.

Ground cover sparse,  
of ferns, seedlings,  
*Alpinia*, broad leafed  
grass, etc.

Some *Smilax* but  
lianes, not prominent.

(66)

Upward forest becomes more  
diversified. *Ficus*, *Psychotria*  
common. Some epiphytic  
*Asplenium nidus*.

"*Sada mushiri*" a "harvesting"  
young fronds eaten, cooked,  
at time incense is burned.  
Cooked fronds have an odor  
much appreciated by old  
men & women. Not  
eaten much now.

On level ridges at higher altitudes the trees reach 15 m. tall and 5 dm. dbh. Mostly 3-4 dm. or smaller. *Quercus* most abundant but many others, thick shrub layer about 2 m. *Roxborthia*, *antidesma*, *Schefflera*, etc. a few small bushes of *Pleiotaxis*.

Near summit stature of trees becomes lower, ferns both terrestrial and epiphytic become more abundant. Bamboos becomes more abundant. Tree trunks 2-3 dm. dbh.

At summit is a patch of bamboos with only a few scattered stunted trees. The patch is on the north side. Oaks and small laureaceous are most common trees around summit.

Bamboos is about 4 m. tall.

Next mountain eastward is much higher, and has a very large patch of bamboos, with low forest in shallow ravines.

(69) The bamboos here seems identical in every respect with that on Tabing Mts.

1956 Ryukyu Is.

June 7 - mountain ridge above  
Yoshihara Villagein thick wet woods  
near summit

37345 *Polypodium thunbergianum* occasional, epiphytic well up on tree trunks.

5 46 *Elaphoglossum* large colony on shaded rocks

6 47 *Neolitsea cinnamomum* <sup>Loeseneriana Engl.</sup> common around edges of bamboo brake

1 48 *Raphiolepis* ? <sup>L. L. Knobell</sup> *lindbergii* (Kirby) Nishi common in edges of bamboo brake

2 49 *Podocarpus macrophyllus* (Thunb.) D. Don <sup>det. C. K. Allen</sup> occasional in understory, (not flowering)

6 50 *Neolitsea* <sup>N. hirsutiflora</sup> <sub>sericea</sub> (Bl.) Kirby, ? occasional in canopy layer

6 51 *Ardisia quinquegyna* Bl. common

6 52 *Ilex* <sup>goetzei</sup> (Hayata) occasional

6 53 *Diplosperma* <sup>Randia</sup> <sub>caeruleum</sub> Champ. common

5 54 *Randia* occasional

5 55 *Euonymus* <sup>lutchensis</sup> T. & G. rare

6 56 *Antidesma japonica* S. & Z. common in undergrowth

5 57 *Scleria* <sup>teretis</sup> (L.) Forsst occasional

400 m.

*Platylis thunbergiana* Kaulf.*Chionophlebia biospila* (Bl.) Preslsterile fronds mostly ~~of~~ curved downward  
small tree, 5 m. tall, ends of branches  
bunchy, compact.  
small tree 4 m tall;  
fruit immature.sapling 2 m. tall,  
sterile (no mature tree seen)tree 10 m. tall; fruit  
immature.small tree very young  
fruits pinkish.

small trees; fruit immature.

tree 8 m. tall; fruit  
immature.

small tree; bud only.

small shrub, stems  
greensmall shrub, fruit  
immature.

caespitose

same - high wooded ridge

37353 5 *Itysas* *Adinandra yagamensis* Ohwi, 350 m.  
occasional

2 59 *Vaccinium?* *Camellia lutchuensis* T. Ito  
rare

3 60 *Polypodiaceae*  
occasional on mossy boulders

6 61 *Cinnamomum?*  
occasional *Styrax japonica* Siebold & Zucc. - var. *bastardii* (Hayata) Morita & Sogaishi

same - wooded ridge

3 62 *Lasiandra?* *L. tashiroi* var. *fulva* (Matsum.) Nakai  
rare

2 63 *Andisia* *quinquenervia* Bl.  
common

4 64 *Lasiandra* *cyanocarpa* Jack.  
occasional

5 65 *Cinnamomum* *laudatum* Engl.  
rare

6 66 *Pteris* *dispar* Kunze? *P. semipinnata*  
common locally in disturbed part of forest

4 67 *Goplenium*  
common locally, terrestrial

5 68 *Tectaria* *variolosa* (Wall.) Copel.  
very common, terrestrial

same - small wooded valley

5 69 *Croton* *curvifolii* M.-A.  
very local

tree 7 m. tall, leaves somewhat glaucous beneath.

- shrub 2.5 m. tall, sterile.

*Prosopis* *farmashiana* (Hayata) Nakai

tree 8 m. tall, fruit immature

63 shrub, fruit pink.

64 shrub

65 small tree; leaves glaucous beneath

var. *dispar* (Kunze) Baker

- *Athyrium* *lanceum* (Thunb.) Wagener, <sup>Milde</sup> ~~bad.~~

69 shrub 1.5 m. tall

same - small wet  
wooded valley

37370 *Cyathea* abundant, forming  
a large part of understory  
37370A *gymnosphaera podophylla* (Hoch.) Copel.

same - tangled disturbed  
forest on lower slopes  
in valley mouth

37371 *Capicum annuum* L.  
rare

2 72 *Elaeagnus*  
common

1 73 *Polygonum* <sup>Chinese</sup> L.  
common

6 74 *Turpilia turnata* Nakai  
common

2 75 *Psychotria* <sup>Ophiandra</sup> *liukiuensis*  
common <sup>Ophiandra</sup>

5 76 *Costus*?  
very local

same - wet valley bottom  
+ 77 *Pleiothrix* <sup>eastern</sup> *bambusoides* Griseb. var. off.  
occasional

150 m.

trunk 1.5 m. tall,  
leaves ascending  
(2 leaves represented,  
one with tip from another  
from same plant).

80-100 m.

74 tangled herb, fruit  
red, not very hot.

75 scandent shrub,  
sterile; fruit said to be  
eaten "subac."

76 scandent; succulent  
young stems slightly  
acid, peeled and eaten  
"suie"

77 tree 6 m. tall, fruit  
immature.

Hayata 75 erect, 0.5 m. tall; flowers  
white.

78 herb, m. tall, leaves  
conspicuously spiralled,  
flowers white.

80 m.

det FA  
McClure  
previously  
written)

rhizomes deeply buried,  
horizontal, branched  
arising from the bottom  
of rhizome at intervals  
of 0.5 m. or more.

1956 Ryukyu Is.

June 8 - Reef on east coast north of Totoriki-ga-jima, perhaps 1000 m. wide

~~old~~ reef margin not at all raised, gently sloping off to a margin cut by surge channels, a few of which penetrate 5 m. or so, the upper the zone where a number of species of flat, short-branched corals are common. Seems to be basically a growth surface with a smooth Porolithon in area of numerous surge channels but not ~~as~~ very actively growing.

The zone of few surge channels shows abrasion and some flat corals, also abundant Turbinaria, on back part, making an almost continuous dark drab green band about 20 m wide.

Then typical rather minutely rough reef flat for 300 m. or so, with thin algal felt.

The growth surface on the outer 50 m. is evidently a veneer on an old cut surface ~~at~~ <sup>2-3</sup> dm. below the reef flat level. A few remnants of the old level remain, badly eaten and undercut.

No obvious agent ~~to~~ of abrasion but much abrasion evident on all bumps and points on algal surface and on reef flat remnants. A few loose rocks in deep tide pools, none lying on surface.

The 300 m. of reef flat is very slightly rolling in topography and slopes very slightly toward back and front from a central high area. The total relief is probably not 2-3 dm. covered by a rather good cover of Diadema. The 400 m. next inward is lower and has a very irregular surface with a relief of perhaps ~~10~~ 1 m. patches being deep and sand bottomed others shallow and rough and covered

1956 Ryukyu Is.

by a large brown alga. This area has water flowing strongly northward at low tide, as there is no escape seaward through the reef ridge.

In shallower sand bottom pools is a sod of *Thalassia*, *Halophila* and *Cymodocea*.

The 300 m. between here and beach is shallow, not so rough but not smooth, with many large boulders covered by an algal felt with sand.

Bordered just below beach by a typical erosion ramp.

10.10.56

37378

*Turbinaria*

dominant on a strip just back of reef margin

~ 79

*Lagassum*

dominant on shallower ~~spots~~ areas in central part of reef.

~ 80

abundant on inner part of outer reef flat.

0 m.

mustard brown, soft.

48

1956 Ryukyu Is.

37381 *Halimeda stipposa*  
common on outer part  
of reef at low tide level.

2 82 *Liagora*  
dominant on outer reef flat

3 83 *Halophila walteri* (R.Br.) Herb.f.  
abundant locally  
in sandy areas at  
about mean low tide  
level on outer edge of  
inner reef flat.

3 84 ~~Cynodon~~ <sup>Halodule</sup> ~~littoralis~~ *uninervis* (Forst.) Aschers. det. C. den Hartog 1969  
abundant locally in  
sandy areas at about  
mean low tide level  
on outer edge of inner  
reef flat.

4 85 *Thalassia hemprichii* (Ehrenb.) Aschers. in  
abundant in sandy  
areas at and somewhat  
below mean low tide  
level on middle part  
and inner part of reef.

June 8 - mouth of Mijara River  
(mangrove swamp)

5 86 *Bruguiera conjugata* (L.) Merr.  
common

3 87 *Kandelia candel* (L.) Merr.  
rare

6 88 *Rhizophora mucronata*  
abundant

ISOGAKI ISLAND.

49

erect from stalks  
buried in sand.

rhizomes buried in sand  
leaves partly protruding

rhizomes buried in sand.

rhizomes deeply buried  
in sand.

0 m.

small tree, 3 m. tall,  
calyx red, radicle  
pendent, hexagonal  
in cross section.

shrub 2 m. tall, buds  
whitish.

small tree, 3-4 m. tall,  
with stilt roots

June 9. above Kainan,  
on Miyako.

(71)  
(Photo  
950-10)

Lowland thickets of  
Ficus, Macaranga,  
Premna, Boehmeria,  
Mallotus, Diospyros,  
Bauhinia,  
tangled with Caesalpinia,  
Canavalia, Flagellaria,  
Amphicarpus, Dillenia,  
Pongamia(?), Cibotium, Glocidion,  
undergrowth of Alocasia,  
Alpinia speciosa, ~~etc.~~  
Psychotria, Evodia, Maesa  
Paspalum conjugatum,  
abundant along trails.

A large Ficus, 15-18 m. tall,  
Covered by epiphytes and  
aroids suggests what  
the forest may have been

(72)

Farther along the  
secondary thicket becomes  
more scrubby and  
has more native forest  
species in its composition  
at about 100 m. Guercus  
~~Ficus~~ and Fraxinus appear,  
also Antidesma, etc.

(73)

Old fields at about 100-120 m.  
being invaded by Melia,  
Xanthoxylum, Macaranga,  
Mallotus, etc.  
A small colony of *Spicea* is also

(74)

Lower slopes covered  
by a dense low wood  
of many species,  
mostly those associated  
with Guercus, but  
a few secondary ones.  
Trees mostly 5-8 m  
tall, less than 10 cm. dbh.  
Many are clusters  
of stump sprouts.

75

Along the stream valley  
the trees are taller, about  
10 m., considerable diversity  
of species, but few trees  
over 10-12 cm. dbh.

Shrub layer rather  
marked, but possible  
to walk without much  
cutting. Rather few lianes

(76)  
Photo  
950-11

300 m<sup>2</sup>  
350

Up the valley the forest becomes taller, more and more big trees, much wetter, more ferns and much *Freyssinetia*.

Epiphytes more common here. Small species of tree fern common.

Much lumbering ~~done~~ is being done in this area.

Upward the forest becomes wetter, more luxuriant, but of lower stature. Epiphytes very common. This would almost be regarded as rain forest. On ridge stature is still lower.

On a broad horizontal ridge to just below summit is ~~thick~~ forest 10 m. or so tall. Here are mud flats, locally, with no ground cover and little or no shrub layer.

Where there is no mud, shrub layer and ferns very well developed.

(77)

(78)

soil on summit moist, 53

pH 6 surface soil - brown  
pH 4.5-5 3-10" down strong brown  
pH 4-4.5 10"-30" "

summit covered by extensive brake of *Pleiothrix* - about 2 m tall on exposed summit, taller lower down. To 4 m.

A few shrubs scattered in the bamboo - *Cinnamomum*, *Viburnum*

Ground cover very well developed in bamboo of *Ophiorrhiza*, ferns, etc. *Ligularia*

Going down s.w. ridge the same sequence is repeated in reverse. The forest is quite wet for a good distance down. Then a ridge that is drier, the forest largely *Guarea* but small size, ferns few in number, undergrowth not luxuriant.

Then in valley bottoms above being *Maga* there is tangled lowland forest.

June 9 - Shing Mige, tributary  
to upper part of north  
branch of Nagara Gawa.

37389 *Mallotus japonicus* M. & A.  
in thicket in steep  
deep river ravine

4 90 *Eugenia jambos* L. <sup>OT</sup>  
just ~~at~~ bottom of stream  
valley

June 9 - southwest  
slopes of Omoto-san,  
above Shing-Mige

6 91 ~~pass~~ *Tragopogon pinnatifidus* (var.) C. Chr.  
on earth banks along  
trail in woods

2 92 *Asarum*  
common in wet woods

6 93 *Camellia latifolia* T. & G.  
common in wet woods

3 94 *Damnoanthus*  
occasional in wet woods

June 9 - plateau just  
south of summit of

Omoto ~~Peak~~ Lake

in wet low forest

6 95 *Ligustrum vulgare* R. Br. ?  
rare.

7 96 *Scleria Fornicata* (L.) Forsst  
common

30 m. small tree or large shrub.

50 m. spreading tree,  
fruit pinkish yellow  
when mature, edible,  
with strong flavor.

250

450 m. sterile; rhizome with  
strong odor, between  
licorice and Vick's  
Vapo-rub.

475 m. small tree 3 m. tall.

500 m. shrub 5 m. tall  
leaves glossy; fruit  
immature.

500 m.

small tree 4 m. tall;  
flowers white, fragrant.  
~~several~~  
several stems from base.

## 1956 Ryukyu Is.

56

37397 *Psychotria*

common in undergrowth

5 98 *Polypodium*occasional, climbing  
tree trunks5 99 (ex?) *Skimmia japonica* Thunb. (?) = *S. Puttkemeri* Nakai

occasional

37400 ~~Eurya~~ ? *Eurya salishemensis* Hemsl.rare ~~(Camellia latifolia)~~ Tte

3 01 (fungus)

rare

4 02 *Mussaenda*

occasional

June 9 - summit area

of Omoto - ~~seen~~ Dakein ~~the~~ dense brake of dwarf  
bamboo (*Pleioblastus*)*Athyrium maximum* (Thunb.) Milde3 03 *Asplenium*very common under  
bamboo (also seen in  
forest below)2 04 *Pleioblastus* *luteus* (Forst. subsp.) Makino  
dominant on summit{ *Ilex fothergiana* Hu5 05 { *Ilex mucronata* Makinooccasional in <sup>summit of</sup> ~~cane~~ <sup>of</sup> ~~water~~ <sup>9, 1956</sup> Dake2 06 *Schefflera odorata* ?  
in "fox-hole" on summit ~~Omoto~~ - Dake*Stewartia tripligala* (Thunb.) Oliv.

## ASHIBI ISLAND.

57

shrub 2 m. tall,  
flowers pale green.*Microcosmus laevigatus* (Burm.) Ching?small tree, bark and leaves  
highly aromatic; fruit immature

small tree, sterile,

(attacked by fungus<sup>#37401</sup>)covering dead portions  
of *Eurya* sp. tree with  
a silvery white coating,  
giving an very impression  
in wet shady forest.scandent shrub,  
calyx lobe white, corolla  
yellow.

520 m.

→ *Diplazium donianum* (Mett.) Tard. - Bl.

det C. V. Morton

det. P.  
Duke04 densely crowded,  
forming a brake 2-4 m. tall,  
canes orange color when  
mature.steep scandent shrub or vine,  
leaves conspicuously pinnatifid  
reticulate beneath, aromatic.

June 9 - south ridges of  
Omoto-sa<sup>DAKE</sup> in thick low wet forest

37407 (var.) *Actinidiaphysa longipetala* (Bl.) Nakai 475m  
3 occasional

3 08 *Hydrangea scandens* ssp. *chilensis* 475m.  
occasional (Maxim.) Mich.

5 09 *Lindernia macrantha* (H. & A.) Copel. 475m.  
occasional, climbing on tree-trunks.

3 10 (seen?) *Styrax japonica* S. & Z. 475m.  
occasional

June 9 - gulches at  
northeast base of Omoto-sa<sup>DAKE</sup>.

11 *Maesa* *lancea* Miy common in second growth

June 9 - valley of Miyana-  
gawa, 1 mile north of  
Kainan Village

10 12 *Fraxinus griffithii* C. B. Clarke  
in second growth, thickets

2 13 *Vincetoxicum* *cyananthum* (Lindner) Winkl.  
climbing in second-growth, thickets

5 14 *Ficus ampelos* Burm. f.  
in second-growth thicket

15 *Bridelia rotunda* (Decne.)  
in second-growth thicket

small tree 6 m. tall,  
in bud only; leaves  
glaucous beneath

small tree 5 m. tall,  
flowers green, sterile  
flowers greenish white

475m.

200m.

shrub 1 m. tall, showing  
a common abnormality.

100m

tree 8 m. tall

vine twining in trees,  
petals bronze with  
greenish center,  
corona white.

small tree

small tree, leaves  
glaucous beneath,  
fruit immature.

June 10 -

(79) small mangrove swamp  
 (Photo 945-24) low scrubby growth with considerable open ~~as~~ sandy, gravelly mud.  
 Excoecaria and Rhizophora mucronata most abundant, with considerable Bruguiera conjugata, some Lummitzera racemosa, and with Cerodendrum inermne getting down into swamp. Also Vitex (prostrate form).  
 Some open areas covered by Paspalum vaginatum others, less low and wet by Panicum antiguum.  
 General height of ~~this next~~ woody plants here is 2-3 m., with some Excoecaria reaching 4 m.

(80)  
 (Photo 945-24).

second small swamp toward Nagara, at mouth of small stream, has principally Bruguiera, with some Rhizophora especially toward the sea.

Borings yield a dark gray shell and coral small, rather clayey in places, elsewhere gravelly.

General height of woody plants here about 2 m.

1956 Ryukyu Is.

June 10 - mouth of  
Naqua-gawa

(81)

(Photo)

945-24

broad open flats  
with no vegetation  
except here and there  
areas of sea-grass.

Areas of low mangrove  
mostly *Rhizophora*,  
some *Bhugniera*, a very  
little *Avicennia* and  
*Sunnittiera*, also areas of *Halodule* and *Imperata*.

None of this more than  
2-3 m. tall.

Exposed either on  
schist rocks, brackish  
*Imbristylis*, *Hedyotis*,  
etc.

(82) Along river bank  
a mixed forest of  
*Hibiscus*, *Pongamia*,  
*Ficus*, *Psidium*,  
*Feretia*, *Raphiolepis*,  
*Pouteria*, *Excoecaria*,  
*Premna*, etc. festooned  
with *Caesalpinia*, *Derris*,  
*Dalbergia* vines.

This is dense, tangled  
and penetrated with  
difficulty. It merges  
into the mangrove  
swamp in places.

(83)

Back of this is an  
open, grassy area,  
wooded with thickets.  
Here the grass is principally  
*Ischaemum muticum*,  
with some *Imperata*.

June 10 - 3 1/2 km. n. w. of

37416 *Paspalum vaginatum* Swartz  
dominant in many  
wet saline places, usually  
submerged by high tide.

June 10 - mouth of small  
stream ~~at~~ 2.7 km. n. w. of  
Nagura  
in mangrove swamp on muddy  
shell and coral marl.

17 *Bruguiera conjugata* (L.) Merr.  
commonest species

~~June 10 - mouth of  
Nagura + Galva~~

18 *Lumnitzera racemosa* (Sav.) Vahl  
occasional

June 10 - mouth of  
Nagura + Galva

19 *Ischaemum muticum* L.  
abundant in low  
open ground back of  
river bank thickets.

20 *Fimbristylis cymosa* R.Br.  
on chert boulder in river-mouth  
mud flat

~~Kera~~  
~~Agave~~ latifolia

culms ascending, forming  
a loose sod.

0 m.

+

shrub 2 m. tall, with  
closely crowded prop  
roots and small  
"knees" or loops of root  
protruding above the mud;  
flowers with calyx  
red, petals dull orange.

1-2 m.

+  
in fls.

shrub 1.5 m. tall; leaves  
fleshy-coriaceous;  
flowers white.

rhizome prostrate, on  
surface of ground,  
fruiting culms erect.

caespitose

1956 Ryukyu Is.

66

37421

*Caesalpinia* <sup>*magia* (Willd.) A.N.</sup>

4

common in riverbank ~~for~~

thickets

*Zosteria japonica* Aschers. & Gr. det. C. den Hartog 1969

3 22

~~*Cyperus diffusus* (L.) Schult. & Schult. f.~~

0 m.

forming a thin sod on sandy  
mud-flat exposed at very low tide

5 23

*Pontederia* <sup>*oblongata* (R.Br.) Benth.</sup>

occasional in river-bank  
thicket.

5 24

*Catharanthus roseus* (L.) G. Don

large colony in open area  
back of riverbank thicket

5 25

*Avicennia officinalis*

local in edge of <sup>*A. marina* (Forst.) Vahl</sup>  
mangrove swamp

3 26

*Raphiolepis liukiuensis* (Roxb.) Nakai

occasional in  
river-bank thicket.

3 27

*Ficus superba* var. *japonica* Miq

common in riverbank  
thicket

67

woody climber.

1 m. ~~1.3~~ shrub 2.5 m. tall.

2 m. ~~OK~~ flowers magenta.

0 m. shrub to 2 m. tall,  
flowers orange, on  
spreading lower branches,  
~~1.5~~ shrub 2.5 m.  
tall.

small tree, almost  
deciduous, at this  
season, fruits pink to  
purple.

June 11 - Miyara River  
3 km. n.w. of Miyara

(84) Thickets and woods  
along river on banks  
(photo <sup>940</sup>) and limestone bluffs.  
*Hibiscus tiliaceus* and  
several species of *Ficus*,  
*Melia*, *Pterocarpus*, *Cordia*,  
a tall bamboo, *Ochroma*,  
*Melanolepis*, and a number  
of other trees, tangled  
and festooned with  
*Caesalpinia* spp., *Clematis*,  
*Ipmoea*, *Ampelopsis*,  
*Canavalia*, *Clerodendrum*  
*inerme*, *Wedelia biflora*  
and other vines and scrambling  
shrubs. *Flagellaria*, *Smilax*, *Dioscorea*.

The ground, in more  
open places, is grass  
covered, especially *Oplismenus*,  
in more shaded  
places, fern covered, by  
*Thelypteris*.

June 11 - 3 km. n.n.w. of  
Miyara

(85) Outcrop of volcanic rock  
covered by grove of small  
pines, peripheral by  
*Imperata*. Under pines  
growth is sparse, with  
*Lilium*, *Aneilema*, *Vernonia*,  
*Elephantopus*, *Polygonum*,  
*Cornus*, *Oplismenus*,  
*Dearnodium*, *Osbeckia*,  
*Clematis*, *Viola*, *Oxalis*,  
several other weeds, most  
of them quite underdeveloped.  
Ground mostly covered by  
pine needles.

June 11 - 0.7 km. e. of  
4 km. n. of Miyara

(86) Outcrop of thinly bedded  
schist. Covered by sparse,  
recently burned *Imperata*,  
with considerable  
*Andropogon*, various  
other grassland species,  
as *Whittenbergia*, etc.  
in small amounts.

1956 Ryukyu Is.

1.5 km.

June 11 - north of Miyara

dissected limestone roughly aligned in parallel short ridges and rows of rough outcrops, some with furrows or very shallow ravines between them, more commonly with elongate cultivated patches between them.

Where there are cultivated patches the ridges are accentuated by throwing of coral picked up in the patches on the ridges.

Where not cultivated the spaces between the ridges are covered by *Imperata* with many associated species.

*Rosa* and *Psidium* are very conspicuous.

*Setaria*, *Themeda*, *Paspalum*, *obtusilae*, *Fimbristylis*, spp., *Eryngium*, *Labiate*.

*Lespedeza cuneata*, *Centella*, *Elephantopus* are all common.

Ridges vary from almost bare to bushy. usually some *Amheranthus*, *Ficus*, *Ampelopsis*, *Polytodea*. On larger ones *Pandanus*, *Toddalia*, *Morus*, *Pipturus*, *Arenga*, *Allophylus*, *Lmila*, *Eryngium*, *Thelypteris*, *Bhruttosoria*, *Crataeva*, etc.

Patch of woods of *Ficus* 2-3 spp., *Hibiscus*, *tiliaceus*, *Morus*, *Rhus*, *Pipturus*, *Melia*, etc. *Melandrepis*, *Pteropus*, forming a fair canopy, tangled with *Ipomoea*, *Smilax*, etc. *Eryngium*, *Fagopyrum*, *Dendro*, thick undergrowth of *Andicis*, *Psychotria*, *Damnacanthus*, *Alocasia*, *Boehmeria*, *Erodia*.

Arrow road is outcropping ofocene limestone.

June 11 - 1.5 km. n. of Miyara,  
s. of Miyara, Makinaka  
in grass on shallow soil  
between limestone outcrops.

37428 (~~68~~) *Tessaria inundata* var. *miquelianum* (Makino)

5 occasional

3 29 *Fimbristylis monostachya* (L.) Herb.  
occasional

3 30 *Fimbristylis dichotoma* (L.) Vahl  
occasional

5 31 *Theseda japonica*  
locally common <sup>Apitude not in</sup> <sub>11-19</sub> <sup>1902</sup>

same - cultivated field  
2 32 *Duchesnea indica* (Aubl.) Fisch.  
weed in cultivated  
field, in full sun.

same - on rough limestone outcrops  
3 33 *Polypodium scolopendria* Burm.f. <sup>Microsorus scolopendria (Burm.) Copel.</sup>  
common

2 34 *Thelypteris*  
common <sup>Clypeos scandens (Mitt.) Nels.</sup>

2 35 *Randia formosa* (Lam.) R. & S.  
occasional

2 36 *Broussonetia papyrifera* (L.) L'Hér.  
occasional

2 37 *Crataeva religiosa* Gr. Fenzl.  
rare

4 38 *Allophylus timorensis* (D.) N.  
rare

3 39 *Polygonum chinense* L.  
common

65 ~~70 m.~~

↓ ~~70 m.~~

100 m.

flowers with lip  
deep pink, tube white.

30 culms single or in  
tufts of 2-3.

31 culms single, ~~erect~~  
from prostrate base  
on stilt roots.

32 prostrate, petals yellow.

33 panicle erect.

shrub, fruit immature  
branches rigidly decurrent.  
34 shrub; sterile

35 shrub; sterile.

36 shrub, flowers white

37 extensive scrambling  
herb, flowers white.  
creeping prostrate stems  
rooting at tips.

74

1956 Hyakuren Is.

37440 *Phaserolus*  
occasionalsame - in patch of  
dense tangled woods1 41 *Morus* (autch var.)  
common2 42 *Murraya paniculata* (L.) Jack.  
occasional, edge of wood5 43 *Randia scandens* (Lam.) R. & S.  
very common in undergrowth  
2 44 *Psychotria*  
common in undergrowth

BB

Akashita,  
June 11 - bridge over  
Miyara River, 3 km.  
n. w. of Miyara  
in old quarry in  
argillaceous limestone  
5 45 *Nephrolepis exaltata* (L.) Schott  
abundant5 46 *Pteris vittata* L.  
common5 47 (grass) *Polygonatum orientale* (Thunb.) Kuntze  
common1 48 *Euphorbia* *characias* *parviflora* (Blanco) Hara  
occasional5 49 *Wedelia biflora*  
common4 50 *Melanolepis multiglandulosa*  
common\* in thicket on side of  
road cut

TSUJUKE ISLAND.

75

flowers yellow,  
seed twisted.

80 m.

tree 6 m. tall, spreading.

OK 42 shrub 1.5 m. tall;  
flowers white.

43 shrub 2.5 m. tall.

44 shrub.

20 m.

OK 45 fronds erect.

46 fronds ascending

ABR.

47 fronds erect, tips arching,  
flowers white.48 sprawling herb,  
flowers yellow.

same - in river terrace  
forest, limestone soil

37451 ~~bamboo~~ <sup>bamboo</sup> ~~bamboo~~ in ridge <sup>1-2 m. tall</sup> (1-2 m.) Ramel  
2 common

5 52 *Ageratum houstonianum* <sup>Milne</sup>  
occasional in small opening.

5 53 ~~Orchid~~ *Neomilia aragoana* grand.  
small colony in grass  
under trees

5 54 *Meliosma curadensis* (Harms) Ohwi & Hatus.  
common in understory

5 55 *Eosodia* <sup>name</sup>  
common in understory

5 56 *Opismenus compositus*  
carpeting ground <sup>O. patens Harms</sup> ~~name~~ <sup>for A. clava</sup>  
under trees

5 57 *Cordia dichotoma* Forst.  
common

5 58 (~~name?~~) *Pithecellobium pentandrum* Wm.  
occasional <sup>Patellaria Mon.</sup>

1 59 *Mucuna urens* <sup>name</sup> 53  
rare

June 11 - 0.7 km. E. of Kawahara,  
4 km. N. of Miyako  
grassy slope outer of

1 60 *Lagenophora repudioides* Kurz

15 m.

15 m.  
F. R.  
Hollow

culms scattered, green,  
erect, 8 m. tall.

~~flax~~ sprawling branched  
herb, flowers mauve  
blue.

53 erect from ~~depressed~~  
globose ~~spike~~ corn,  
sepals and 2 petals green,  
lip white with purple  
lateral veins.

54 shrub 2 m. tall, ♂

55 shrub 2 m. tall ♀

56 stems prostrate  
fruiting culms ascending

57 tree 5 m. tall, almost  
leafless at this season;  
pilis green.

58 woody vine; catkins  
greenish.

of pods hanging on  
dead vine!

40 m.

June 11 - 3 km. n.n.w. of Miyara, 0.5 km. n.e. of Akashita in small grove of pines on volcanic outcrop  
 37461 *Lilium longipolium*  
 5 common

June 12 - 2 km. s.e. of Dachio-yaki to 2.2 km. e. of Dachio-yaki

Smoothly grassy hills, rather closely grazed. Grass mainly *Imperata*, with much *Pteridium* of small size, fronds not more than 3(-4) dm. long. Many herbs such as *Erodium*, *Blumea*, *gymnura*, *L. jordanii*, peculiar lythaceous one, *Thelypteris*, etc.

Scattered fairly large spreading pines.

These mostly show fire scars and charred on lower part of bark. Undoubtedly the area has been burned not long ago.

Patches of *Alpinia* species on upper slopes.

As I left the area burned about 1 month ago scattered small depressed shrubs of

(90)

(110-150)  
843-51

(91)

bulb scales bright yellow, white within.

(91)

Island and rock

In shade of pines are more species of ferns as *Ligularia*, *Polypodium*, *Asplenium*.

92

Steep east facing cliff base, some scrubby pine, *Miscanthus*, *Ostreae*, *Eurya* 700', shrubby *Quercus cypripedifolia* and, notably, *Acacia* f. *semenz.* + a few other shrubs, on slopes *Imperata* and *Pteridium*.

(93)

Upper open pine woods with *Quercus* and scattered shrubs grade into a mixture of pine and dense scrub forest of

(94)

*Viburnum Raphiolepis*, *Blue*,  
*Westlandia*, *Eurya*, *Cyathia*, *Ficus*,  
*Liquidambar* and many other broad-  
leaf evergreen shrubs  
and small trees  
Forest shrub layer  
mixed with frequent  
figurines. Dense along  
edges with *Phormium*, *Indigofera*,  
*Miscanthus*, *Pteris*, etc.

95 In head of large  
wooded ravine - a  
considerable colony of  
*Livistona* - many trees,  
from small rosettes to  
trees with trunks 3 m tall.  
leaf tips droop but not  
as much as in some  
cultivated specimens.  
All petioles seen are spiny,  
the spines long sharp and  
well separated. Older trees  
have last year's inflorescences  
no new ones seen

96 On some exposed <sup>soil</sup> south  
slopes the vegetation is  
a mixed scrub

97 High pine woodlot to  
have undergrowth, largely  
*Miscanthus* in places.

98  
Photo  
945-34

Wind beaten *Eucalyptus* and  
*Rhododendron* shrubs  
common in edges of  
open pine, some ~~and~~  
~~so~~ *Hyperia*, *Lycopodium*,  
*Asplenium*, on high ridge. One  
*Scirpolabidum*

Back a little by  
*Rhododendron* etc.,  
*Glossyina*, ~~etc.~~ *Liquidambar*,  
etc. forms dense  
scrub. A few pine  
ridges.

99 From here up to crest  
is thick forest, 10-12 m  
high of *Diospyros*, *Adonis*,  
*Saurauia* etc. trees as  
much as 2.5 dm dbh. <sup>100-110 cm</sup>  
Ground as 7.5 dm dbh. <sup>100-110 cm</sup>  
Flank layer of *Lycopodium*,  
*Croton*, etc. badly  
disturbed by cattle.

100  
*Pinus*  
*Scirpolabidum*  
*Hyperia*  
*Lycopodium*

Forest on crest much the  
same, but slightly lower  
status. Forest becomes an  
important component.  
*Livistona* and *Araceae* fairly  
common on forest floor  
10 m. tall.

101 At the summit the forest  
is somewhat due more

open beneath less  
fern and other  
ground cover, though  
this may be due to  
grazing as on one  
part of the trail there is  
more luxuriant  
ground cover.

A few epiphytic ferns,  
incl. *Asplenium nidus*,  
*Ptychosorus nephrolepis*.

(101) The crest is a broad  
rounded ridge  
rising to a gentle  
peak then descending  
to a saddle.

In the saddle the  
forest is somewhat tall,  
to 15 m. and has some  
excessive ferns.  
A few secondary trees  
seen here, cf. *Mascazona*,  
*Tremo*. Limestone rather  
common. Some seen  
with petioles prickly  
only half a ft. to top.  
Only 14-20 cm. of  
segment tip drooping  
*Grimmia apiculata*,  
*Acarsina*.

A climbing *Piper* and  
an aroid, cf. *Raphidophora*,  
very common here.  
An enormous centipede

seen 15 m. up on a bush.  
Can they see the other  
day also on bush  
'magical' and people  
still find it.

(102) Back from saddle southward  
an area of slope is a considerable  
area of limestone up to  
10 m. tall. All have  
petiole thorns in lower  
half of b. Most have  
some hair growth on it.  
Ground tends to be  
dry beneath them,  
but with a few ferns  
and with *figulalina*.  
Very few dead leaves  
persist on palms.  
Ground has white  
layers tend to be eaten  
off by insects, so bay  
leaves become oblong  
longitudinal pressure  
and remain. Color is dull  
to reddish brown.

Slope forest in center  
with bottom of saddle  
mixed, palm and *prumnia*,  
*Andiccia*, *Dwarf palm*  
etc. Ferns very  
luxuriant especially  
in gulch bottoms. Forest  
10-15 m high. Some epiphyte

Ravines in dissected

(105) coastal terrace are  
filled with thickets.  
Trees seen include Pines,  
Rhododendron - Macrorhynchia,  
Festuca, Yucca, Pandanus,  
Zizyphus, Mallotus,  
*Euphorbia*

Kura, <sup>Kura</sup> June 12 - 2 km. s.e. of ~~Dadogaki~~ <sup>Padi-Fu-Saki</sup>,  
on north peninsula.

37462 *Melastoma* <sup>Ostrolinia</sup> common locally on low ground  
5 in deep grass.

2 63 (losses) *Mitchella rhombifolia* S. & Z  
common in low wooded ravines

4 64 *Ehretia dicksonii* var. *japonica* Nak. <sup>Ostrolinia</sup>  
common in low wooded ravine  
ridge s. of Kura Dake  
same - upper edges  
of forest along crests  
of ridges

2 65 *Itza formosana* H. L. Li

2 66 *Hibiscus mutabilis* L.  
rare

5 67 *Eurya*  
common

6 68 *Pinus luchuensis* Mayr.  
abundant, dominant  
locally, scattered elsewhere

35 m.

*Dimocarpus* L.

flowers rose pink.

small tree; leaves  
somewhat glaucous  
beneath, old inflorescence  
red.

small tree, fruit greenish  
yellow.

150 m

shrub ~ m. tall  
shrub 2 m. tall

shrub 1.5 m. tall,  
fruit immature  
spreading tree 10 m.  
tall, 3 dm. dbh.

37469 1 Viburnum awabukii K. Koch  
common  
c 70 ~~laevola~~ sericea va.  
rare on brink of cliff  
in open grassy nose  
3 71 Ficus poveolata var. thunbergii -  
local, clinging to rocks  
in edge of pine ~~woods~~

## Kura Dalee,

June 12 - 2-2.2 km. e. of  
Dasho-ga-ha Dadifu-taki

in dense moist forest

9 72 *Asplenium* <sup>Colysis</sup> ~~virginia~~ (Nord.) Ching  
abundant in bottom  
of moist ravine cut in  
schist  
5 73 *Alpinia* <sup>var. cinnamomea</sup> common

4 74 *Heterosmilax* <sup>sp.</sup> *Smilax japonica* Kunth  
*Smilax* <sup>det. T. Iwama 1959</sup> occasional

2 75 orchid *Calanthe fuscata* Schl.  
occasional, terrestrial

(*Stauntonia* <sup>sp.</sup> *hexaphyllo* (Thunb.) Delamne)

2 76 *Schefflera odorata*  
rare

150<sup>m</sup> 15 small tree 6 m. tall;  
fruit red, not quite mature  
shrub 1.5 m. tall  
flowers white with  
purple veins.  
vine, clinging to  
rocks but with  
erect branches, also  
with characteristic  
witches brooms; sterile.

200-250m

16 dark green, fertile  
gravel eric, sterile  
spreading.

17 rhizome aromatic,  
stems ascending,  
fruit immature, smooth,  
extensive climbing  
stem from a hard  
tuberous rhizome;  
fruit immature  
~~flowers~~ leaves a dull  
translucent grayish  
green; flowers white  
with ~~a~~ a bright  
orange spot in middle  
of lip.

18 sterile woody vine,  
leaves with conspicuous  
reticulate venation beneath.

June 13 - s.w. base of Banna-dake  
on weedy roadside

37477 *Crotalaria* <sup>numerous</sup> Desv.  
6 occasional

5 78 *Paspalum conjugatum* Berg.  
abundant

3 79 *Ipomoea pes-caprae* var. *brasiliensis*  
several plants seen

1 80 *Artemisia capillaris* Thunb.  
common

1 81 *Wedelia chinensis* (L.) M. & S.  
common

5 82 *Vincetoxicum* <sup>lycanthrum</sup> *lycanthrum* Web.  
occasional in thicket

3 83 *Melochia corchorifolia*?  
common

1 84 *Hedysotis*  
rare <sup>4 diff sp?</sup>

5 85 *Distylium sessilifolium* <sup>Itza Formosa</sup>  
common in thickets

5 86 *Ageratum conyzoides* L.  
common

1 87 *Lysimachia mauritiana* Lam.  
occasional

erect much-branched herb  
1 m. tall, flowers bright  
yellow with dark brown  
spot at base of wing.

erect culms from  
creeping superficial  
rhizomes.

prostrate, flowers  
bright purple collapsing  
about 4 p.m.

erect herb, odor not  
very strong.

prostrate, flowering  
stems ascending,  
flowers yellow (rare at  
this season)

milky herbaceous  
vine; flowers with  
corolla lobes reddish  
with green centers,

corona white; pods green.  
flowers pale lavender.  
flowers white.

shrub 2 m. tall,  
flowers white.

erect strong smelling  
herb; flowers white.  
leaves fleshy, flowers  
white.

s.w. base of Banza-dake small shrubs with no forest around it.

(106) (photo 940-8) The gently sloping land at the foot of the mountain is covered by an irregular mixture of thickets and grassy or weedy patches. The thickets are mainly *Acacia confusa*, probably planted, and pine, perhaps planted. The younger thickets have considerable ground cover of ferns, etc. Elder ones have very little. Mixed with the planted trees are native ones, such as *Ficus*, *Diospyros*, etc. Some *Miscanthus* here and there in edges and thin

spots. The small road is lined with weeds, dominantly *Paspalum conjugatum* and *Imperata*, but many other species.

(107) The slopes above, examined with binoculars, are semi-open, with bushes and grass, mostly *Miscanthus* in most places.

*Acacia confusa* goes well up the slopes.

June 15 - shot  
southeast of  
Hirai

(photo  
347-3)

(108) Beach ridge with scrub  
of *Scaevola*, *Preenna*,  
<sup>a little</sup> *Pandanus*, *Misanthus*,  
<sup>quettiera</sup> *Hibiscus*, *Vitex*, *Messerschmidia*,  
<sup>ferox</sup> *Wilstroemia*, *Clerodendrum incisum*,  
<sup>carpophylla</sup> *Wedelia*, <sup>lutea</sup> *Lepturus*, <sup>lutea</sup> *Indigofera*,  
<sup>lutea</sup> *Limonium* (?), and patches  
mostly closed, varying from  
1.5 to 2 (or even 3) m. in height.

(110) From the front of the ridge  
a rough but abraded limestone  
platform protrudes about  
20-25 m. above  
a well developed erosion ramp,  
this notably abraded and  
with an accumulation of  
well rounded cobbles and  
pebbles at top and scattered  
in pits and foot holes on it.  
Platform in places undercut  
as much as 2 m. the rock very  
well abraded, elsewhere not  
undercut, fronted by a pebble  
or cobble beach. Ramp about 1 m. high  
In undercut places fresh  
water dripping from ceiling  
(heavy rain yesterday and  
last night).

Locally some patches of  
sandy beach. Here are  
scattered *Pomoea per-capitata*,  
*Euphorbia chamaesola*.

*Lepturus*, *repens*, etc.

On the top of the platform,  
the relief is about 1 m.,  
generally. The vegetation  
is a mixture of *Zyzanthes*,  
*Pemphis* (very prostrate),  
*Carrichtera* (very prostrate),  
*Hedysarum*, *Lepturus*, *Indigofera*,  
*Limonium* (?), and patches  
of low bushes of *Hibiscus*,  
*Messerschmidia*, *Scaevola*,  
*Cinum*, *Vitex*, *Euphorbia*, *Artemisia*, etc.  
The cover is rather full  
but in places there is  
considerable limestone  
showing.

(111) Large stretch of beach  
on photo has been somewhat  
eroded, exposing patches  
of the platform and  
large areas of pebbles  
and cobbles. This  
has scattered tufts of  
*Euphorbia*, *Lepturus*, *Messer-*  
*schmidia* (very small  
bushes), *Scaevola* seedlings,  
etc. Some *Chamaesyce*.

The sand is being  
excavated and hauled off.

(109) plain back of beach ridge where coral is very close to surface and is exposed here and there. Some small areas of this are cultivated. Mostly it is in grass, chiefly *Imperata*.

Close to the beach ridge there are scattered bushes of *Acacia*, *Premna*, *Vitex*, etc. especially on limestone outcrops.

Away from the ridge these are more and more replaced by *Psidium*, *Rubia*, *Ostendneles* (?), *Raphiolepis*, *Ampelopsis*, *Rubus*, *Callicarpa*, etc.

Many herbs, especially *Holarrhena*, *Lespedeza*, *Desmodium*, *Leucas*, etc. in grass.

Farther away from beach *Psidium* becomes very abundant in grass. In places it may form half the cover.

Patches of *Agave american* are occasional. Cyads are not common here but are found.

(111)  
Photo  
847-46)

June 15 Ohama - mouth of inlet  
scrubby forest on rough limestone. Mixtures of *Hibiscus*, *Ficus*, *Petrea*, *Broussonetia*, *Centaurium*, *Pouteria*, *Murraya*, *Mallotus*, *Carmonia*, away from sea, *Macaranga*, *Ficus* sp., *Melanolepis*, *Erythrina*.

Enormous orb-weaving spiders with leg spread of 18 cm. a man several colors, very small males or else another species, not more than 1.5 cm. across commensal in same web. Large ones eating scorpions.

Interrupted inland by small patches of garden between outcrops. Trees get taller inland. Varies from about 2 m. on outer edge to even 8 m. inland. Some *Calophyllum*, *Casuarina* and *Acacia* inland, perhaps planted.

This whole forest very dense and tangled with vines, *Ampelopsis*, *Caesalpinia*, *Clematis*, *Polygonum*, *Toddalia*, *Vitis*,

(113) On west side of inlet is well developed beach rock with seeps of fresh water trickling down over it and seeping out of it. Maximum thickness seen about 0.8 m. Mostly rather fine grained ~~maximum thickness~~ Upper parts rather pitted lower parts in places broken up. Some loose beach sand locally.

A *Phyllanthus* like shrub but leaves not distichous, common at base of cliffs and on upper part of beach, with *Hibiscus*, *Cleodendrum*, various grasses, etc.

On limestone bluffs is scrub of *Hibiscus*, *Pandanus*, *Arenga*, *Cyathina*, *Pipturus*, *Ficus*, etc. *Pittosporum*, *Figustrum*, *Carmonea*, *Raphiolepis*, *Premna*, *Garcinia*. Dense, tangled, 2-4 m. high.

*Pandanus* and *Hibiscus* are most abundant.

On eroded beach rock well below high tide level, *Limonium* (?) *Zoysia*, etc. grow abundantly in pits and crevices. Above this, especially on sandy spots, *Iphomea pes-caprae* and *Zoysia tenuifolia*, *Euphorbia chamaissoides*, etc. are abundant.

East of Ohama along shore is rather extensive beach scrub of *Scaevola*, *Hibiscus*, *Pandanus*, *Premna*, etc. *Cleodendrum*, etc. The shore here is low and shelving composed of a mixture of sand and coral gravel, occasional outcrops of post-miocene limestone, some of them huge boulders or remnants. The sandy and gravelly flats here where not covered by beach scrub, are grassy, with *Sporobolus virginicus* below high tide level, several other halophytes, *Zoysia tenuifolia* and *Iphomea pes-caprae* in patches above

high tide.

On large limestone boulders ~~is~~ is a sparse scrub of *Premna*, *Pittosporum*, *Carronia*, *Ficus*, *Pomphis*, *Messerschmidia*, *Raphiolepis*, ~~is~~ with *Lepturus*, *Zygia tenuifolia*, *Hedysotis*, etc.

June 15 - Between Miyara and Shinshu

(114) Wide coral plain between road and coast, very little of it in cultivation, mostly in pasture.

The half nearest the road is a mixture of *Imperata* with *Milcanthus*, probably *M. sinensis*, judging by the very narrow leaves. The soil is thin and scab-like outcroppings of the rough limestone are frequent. Many herbs and considerable *Psidium* mixed with the grass. Large areas have broken coral rock in pebble sizes instead of soil. A few small clumps of *Cyperus*.

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116

Toward the sea the *Miscanthus* drops out and *Imperata* and *Setaria* are the abundant grasses. *Psidium* is frequent. *Rosa* also. Many herbs and a few shrubs are mixed in.

Principal herbs seen are:

*Lespedeza cuneata*  
*Artemisia*  
*Galium*  
*Euphorbia hirta*  
*Leucas*  
*Panicum repens*  
*Congya bonariensis*  
*Emilia sonchifolia*  
*Fimbristylis monostachys*  
*Centella asiatica*  
*Vernonia cinerea*  
*Desmodium* spp.  
*Phaseolus*

June 15 - just east of Shinshu-shaki

119

The shore here is peculiar. There is an erosion ramp about 50 m. wide, pitted and covered by solution basins. <sup>little or no</sup> *Limonium* is abundant here, below high tide level. A little

sesuvium with it.

Behind this is a flat about 30 m. wide, of a veneer of sand heavily covered by a dense stand of *Zoysia tenuifolia* with a few miscellaneous herbs. Many young *Messerschmidia* along landward margin.

Then a broad boulder-cobble ridge covered by a low beach scrub of *Messerschmidia*, *Pandanus*, *Clerodendrum*, *Icaevola*, with *Zizanias*, *Vitex*, *Zoysia*, etc. in openings.

In grassy flat back of boulder ridge <sup>200</sup> m. or more from sea are many large pieces of pumice lying on the ground, on rough coral.

Here the rough limestone outcrops are arranged somewhat in rows, rather zigzag, perpendicular to the coast.

June 15 just west of Shingalas  
band of low tangled  
brushy vegetation  
on limestone. A mixture  
of *Pandanus*, *Cyca*,  
*Alpinia* species, *Miscanthus*,  
*Toddalia*, *Carmona*,  
*Calophyllum*, *Aldophyllum*,  
*Prema*, *Psidium*, *Wurais*,  
*Mallotus*, *Ficus*, spp.  
This is tangled with  
*Ampelopsis*, *Wedelia*,  
and *Clematis*.

This is mostly 2-3 m.  
tall, but where there is  
much *Calophyllum* it  
may be 5-6 m.

Here and there patches  
are cleared in this and  
planted to 2 varieties of  
sorghum and *Sugba* (?)

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1956 Ryukyu Is.

June 15 - ~~Miyakojima~~ + Lam. e.  
of Miyakojima Miyakojimain grassland on soil  
between outcrops of  
rough limestone.

37488 ~~Brachystelma~~ <sup>Trichosanthes</sup> *Brachystelma* L.f.  
3 occasional

2 89 *Vernonia cinerea* L.  
common

2 90 *Conyza bonariensis*  
common <sup>Trifoliate</sup> *Conyza*

1 91 (sub) *Lysimachia congesta* L.  
rare

1 92 *Wahlenbergia glauca* (Forst.) A. DC.  
occasional

June 15 - 1 km ~~East~~ of Obama,  
on Miyakojima-Wan, near Isobe

3 93 *Lathyrus japonicus* Andr.  
occasional on sandy beach

3 94 *Sophora tomentosa* L.  
rare on limestone boulders

3 95 *Pemphris acidula* Forst.f.  
occasional on limestone

5 96 *Ficus retusa* var. <sup>retusa</sup> *retusa* (Thunb.) <sup>Thunb.</sup>  
occasional on rough  
limestone boulders

7 97 *Lesquerella portulacastrum* (L.) L.  
salt flat, inundated  
by high tide

103

37488a *Scorodanella laevigata*  
(Guentz.) Rottb.

erect, flowers yellow.

flowers purplish.

small plants flowering,  
larger ones not yet.

flowers bluish violet.

1 m.

prostrate, flowers white.

small shrub

depressed shrub,  
flowers white.

depressed shrub,  
bigs purplish.

(L.) L.

prostrate, very fleshy,  
stems greenish with  
reddish nodes, leaves  
green, glossy, compressed,  
flowers pink.

104

1956 Ryukyu Is.

37498 *Suaeda nitroba* (R.B.) Moq5 local on saline flat,  
inundated by high tide2 99 *Galium*  
on rough limestone or in  
edges of brush.37500 *Sporobolus virginicus* L. <sup>Kuntze</sup>  
2 dominant on sand flats  
below ~~high~~ tide level.

105

seed, very fleshy.

105 4 day

June 15 - just east of  
Obama, on Miyara Dan2 01 *Limonium arborescens* (Molin) Moquin  
abundant on rough  
limestone below high tide level.5 02 *Ligustrum japonicum* Thunb.  
common on low limestone  
bluffs above beach5 03 *Phyllanthus*? <sup>*Scorodonia* Bl. ex A.</sup>  
common at top of beach6 04 *Solanum* <sup>*Verneuilianum* L.</sup>  
rare in scrub on rough  
limestone6 05 *Polystichum* <sup>*Cystopteris* (L.) Presl</sup>  
on shaded limestone cliffJune 15 - Tada Hama,  
on coast s.s.e. of Hirae

1-3 m.

on sandy beach ridge

2 06 *Digitaria*  
occasional5 07 *Isaevola sericea* Vahl  
very common in beach scrub1 dwarf shrub, mostly  
sterile, a few in bud.2 shrub 1-1.5 m. tall,  
fruits very immature.

3 shrub 1 m. tall

4 shrub 2 m. tall; flowers  
white, ripe fruit yellow.

1 culms spreading

7 shrub 1.5 m. tall,  
flowers white, fruit white.

37508 *Allophylus tenuissimus* (DC.) Bl.  
 2 occasional in beach ridge scrub.

2 09 *Baccharis sericea* var.  
 common in beach ridge scrub

6 10 *Ipomoea littoralis* Bl.  
 common at edges of beach ridge scrub

5 11 *Chenopodium acuminatum* Willd.  
 common on sandy patches on limestone terrace just above sea

2 12 *Indigofera Lubbersiana* Meli.  
 common on rough limestone just above sea

2 13 *Cassytha filiformis*  
 occasional parasitic on various plant. on rough limestone near sea

1 14 *Lepturus repens* (Forst.) R. Br.  
 very common on rough limestone near sea

2 15 *Artemisia capillaris* Thunb.  
 common on rough limestone near sea

5 16 *Leucas*  
 common on rough limestone near sea

2 17 *Lotus australis* R. Br.  
 occasional on rough limestone  
 Junc 15 - 1 km. S.E. of Miyara  
 on coast.

18 *Pilea peltata* H. & A.  
 on rough limestone at top of beach in pits and crevices.

shrub 1 m. tall.

shrub 1 m. tall, flowers - purplish, fruit white.  
 prostrate, flowers rose purple, darker in throat.  
 erect

prostrate, flowers red, pods quadrangular.

twining yellow stem.

1 m.

flowers white.

prostrate, flowers white

stem fleshy.

June 16 - north of Ogata  
east of Kara-dake

(121) (Photo 950-4) scattered pines on grassland on schist gullies, either grassy or filled with Pandanus scrub. Some admixture of miscellaneous shrubs and small trees.

122 Eocene limestone area ~~covered by~~; where it is not much dissected - covered by a thick forest of *Ficus*, *Diospyros*, *Andisia*, etc. scarcely any undergrowth except tangled bases of lianes. Scattered second story trees.

Canopy irregular 6-10 m. Mainly *Ficus* and *Diospyros*, but occasional *Melanolepis* and *Macaranga*, *Garcinia*, *Andisia*, *Ulmus* and small *Diospyros* in second story.

Lianas are *Smilax*, *Piper*, *Clematis*, *Cleagnus*, *Cyrtosia*, spiny *Randia*, *Pisonia aculeata*

Almost nothing on ground except a few creeping *Piper* vines. Much bedrock angular rock exposed, mostly limestone but some of it rather sandy. Some also *asias*, and very few ferns.

<sup>in ~~south~~ part of forest</sup> Locally several other trees. *Pisonia aculeata* very commonly climbing through trees. ~~Fruit~~ fallen fruit abundant on ground and hanging in trees. *Areca* common generally.

<sup>Central</sup> ~~in south~~ part are enormous pointed castle-like blocks of limestone simulating human construction. Many roots enveloping many of these.

The higher parts of the forest are perhaps 15-20 m. and are principally enormous canyons. Under them are *Diospyros*, *Garcinia*, *Murraya*, <sup>strongly</sup> *Smilax*, *Fagellaria*, etc.

Working gradually seaward and downway over a series of escarpments, encountered more and more post-Miocene limestone, but never completely ~~leave~~ left the Eocene limestone. Finally, at the same time, there were quantities of large pumice cobbles and Hibiscus and Hernandia became common, then dominant. Then Diospyros and Ficus, with somalensis and garcinia had made up the greater part of the forest.

(125) ~~as~~ are a solid, somewhat wind-swept, stand of Hibiscus and Hernandia with some Pandanus.

At the top of the beach is a belt of Vites, Ipomoea, ~~per~~ caprae, Clerodendrum and small bushes.

The inner edge of the reef flat is littered with a great abundance of large boulders, up to 2 m. or more in diameter. Most of these are post-miocene limestone, a few

are Eocene. At the mouth of the southernmost dry inlet are some fine Eocene boulders out in open similar to those in forest. Also a contact, vertical (?) between Eocene and post-miocene. The contact is in the bottom of the inlet with Eocene much higher, on south side of inlet.

Trees & shrubs at top of beach - Calophyllum, Clerodendrum, Willstroemia, Terminalia catappa, Thespesia, Messerschmidia, Dodonaea, Hippocratea, Colubrina, Guettarda. All except the first 3 and Messerschmidia are rather scarce.

Scaevola seen only on the north end, within a ~~few~~ couple of hundred meters of the stream mouth.

(126) Along the stream is a clearing that is filled with old-field scrub & grass. Vites, Dodonaea, Scaevola, Pandanus, ~~frax~~.

(127) A small patch of Bruguiera in stream above bridge. Below bridge stream is lined

with *Excoecaria*. Back of this is a scrubby mixture of *Erythrina*, *Ficus*, *Cerbera*, *Leucaena*, *Chietia*, *Dodonaea*, and *Pandanus*, *Clerodendrum inerme*, *Cassia*, *Psidium*, *Alpinia* species, *Calophyllum* *leucancum*, *Fraxinus*? *Hernandia*, etc.  
3-5 m. tall.

June 16 - coast <sup>n.e. of Ogato,</sup>  
~~south of~~ <sup>east of</sup>  
~~Kara-dake~~ south of mouth  
of *Toro gawa*.

on sand flat at top of beach, 2 m.

37519 ~~Beccaria~~ *Pongamia indica* var. *angustifolia* — (Wight) Wedd.  
rare

3 20 *Guettarda speciosa* L.  
rare in edge of forest.

5 21 *Wedelia prostrata* (H. & A.) Hand.  
local in grassy areas

6 22 *Allophylus timorensis* (D. C.) Bl.  
rare in edge of forest

3 23 *Colubrina axillaris* (L.) Brongn.  
rare at edge of forest

3 24 *Dodonaea viscosa* (L.) Juss.  
rare at edge of forest

1 25 *Ipomoea salina* (L.) J. F. Gmel.  
rare and local

June 16 - s.w. base of  
Banna-dake  
Rice field weeds - *Agratum*  
*conyzoides*, *Edelsta alba*  
*Hypericum* sp., *Marsilea* sp.,  
*Lindernia* sp.,  
*Anthrazan hispidum*,  
*Centella asiatica*,  
*Cynilia sonchifolia*,  
*Panicum repens*,  
*Edriochloa crus-galli*,  
*Monochoria vaginalis*,  
*Polygonum* sp.

fruits red, pluted.

shrub 2 m. tall

very prostrate,

flowers yellow

shrub 1.5 m. tall, buds

white; fruit, not quite mature.

shrub 1 m. tall, sterile.

shrub 1.5 m. tall, sterile.

prostrate, flowers white.

114

1956 Ryukyu Is.

37526 *Ixeris japonica* (Blanco) Nakai  
common on bare sand1 27 *Ixeris riparia* (L.) A. Nels.  
common on bare sand2 28 *Chenopodium acuminatum* Willd.  
occasional on bare sand2 29 *Lepturus repens* var.  
occasional30 ~~(L.)~~ *Cassia* <sup>Indigofera</sup> *hirsutissima* var.  
occasional at edge of  
forest31 same at about high tide level  
on pitted large  
limestone boulders  
on lower part of beach5 31 ~~(L.)~~ *Philonotis Wrightii* Nutt.  
common1 32 *Limonium sinuatum* (Molin) Makino  
commonJune 16 - terraces <sup>n.e.</sup> of  
Kawasaki Ozato  
in dense forest on  
dissectedocene limestone2 33 *Damnoanthus*  
rare6 34 *Premna* <sup>blowfish</sup>  
common locally1 35 ~~Mucuna~~  
common locally

10-20 m.

Ishigaki I.

115

rhizome buried, running,  
flowers yellow.- rhizome buried, running,  
leaf blades flat on  
surface of sand; flowers yellow  
erect

34-35. 36 tufted

37 <sup>Indigofera</sup> <sup>hirsutissima</sup> (Molin) Okun. shrub 1.5 m. tall  
<sup>(Molin)</sup> Okun.

1 m.

38 forming dense mats  
and cushions; fruits  
red.

39 dwarf shrub, buds only.

40 ~~very~~ very small shrub,  
sterile.41 tree 8 m. tall, flowers  
pale green, info fruit black.42 ~~seed~~ ~~fisher~~ ~~seed~~ vine climbing in tops of  
trees ( seeds picked up  
on ground beneath ).

116 1956 Ryukyu Is.

37936 (cusp.) *Mallotus phillippinus* (Lam.) Miq.

" rare

3 37 *Pisonia aculeata* L.  
common

3 38 *Boehmeria formosana* Hayata  
rare

3 39 *Lysimachia albertiana* Miy  
local

3 40 *Randia cochinchinensis* Champ.  
common

3 41 *Viburnum auratum* Lindl.  
rare

3 42 *Ficus horishii* Hayata  
common

Feb 17 - north of mouth of  
Todoroki-gawa

3 43 *Zanthoxylum armatum* Maxim.  
common on sand ridge  
back of beach

Ishigaki I.

117

small tree 6 m. tall;  
fruit red.

scrambling vine  
climbing in tree tops,  
~~has~~ spiny  
and spineless, not  
certain if different  
plants or branches of same,  
+ spiny branches may  
be from different plants,  
fruits picked up on ground.  
herb 1 m. tall.

flowers yellow

scrambling ~~or~~ shrub  
with tendency to  
produce rigid short  
branches, fruit immature.  
small tree, 4 m. tall,  
fruits immature.

tree with large  
buttresses at base of  
trunk, fruit on small  
branchlets coming out of  
trunk and large limbs.

4 m.

44 rounded densely branched  
bush, leaves glossy,  
fruits green, glandular.

June 17 - Ishigaki City -

Cultivated plants observed:

Trees: *Garcinia spicata**Calophyllum inophyllum**Morus sp.**Prunus persica**Carica papaya*2. *Cocos nucifera*2. *Areca catechu**Ficus retusa**Casuarina equisetifolia**Podocarpus macrophyllus**Ehretia**Citrus**Melia**Livistona**Hernandia**Delonix regia*

Croton  
Aleurites  
Albizia  
Albizia  
H. sebifera

Shrubs: *Codiaeum variegatum**Cycaz revoluta**Hibiscus (ananata hybrid)**Rosa**Cordyline**Polyscias guilfoylei**Bougainvillea**Ascalypha*garden plants: *Luffa* sp.?*Xanthosoma sagittata**Musa**Crinum**Luffa**Cucurbita*

Shrine forest:

*Calophyllum inophyllum* - large, 300 yrs.*Casuarina equisetifolia**Ficus retusa**Ficus**Hernandia*

June 18 - Taketomi, shore near pier - narrow sandy beach backed by a low sea wall. Back of the wall is a narrow strip of scrub.

Between the pier and Hayama is agricultural land. It is merely the accumulated soil between closely spaced outcroppings of rough limestone. On these, and even on piles and fences of well picked up from the fields, Cycas is very abundant.

In the small fields or plots, sugar cane, sesame, ~~long beans~~, ~~cowpeas~~ sweet potatoes and millet were observed.

*Acacia confusa* (sōsōjin)  
planted for typhoon protection and for wood.

#### Hayama Village:

*Rosa* sp., *Chrysanthemum* sp., *Asclepias curassavica*, *Catharanthus roseus*, *Canna* hybrid, *Codiaeum variegatum*, *Zephyranthes rosea*, *Sansevieria*, *Podocarpus*, *Morus*, *Garcinia*, *Gladidulus* sp. Planted in ~~now~~ ~~now~~

#### Hayama Village -

The streets are lined with *Garcinia*, *Morus*, *Podocarpus*, *Cyathina*, *Livistona*, *Canis*.

*Morus* used in sericulture. *Garcinia* used for house construction.

Island is  $2.5 \text{ km}$  <sup>around</sup> (1 mi = 4000 m). 223 families on island, 1100 pop. 88 cattle and some goats.

#### Nishio Shrine -

*Ficus* *natura*

*Porteria*

*Melanolepis*

*Ficus* *gibba*

*Garcinia*

monument to grave of Nishio, historical figure who worked on Okinawa in construction of their castles, grave is here. Old shrine was replaced in 1953. Stone stones said to have been brought from Okinawa.

#### Akayama.

Tower on paleozoic outcrop about  $10-12 \text{ m}$ . above surrounding country. General aspect of country from here is wooded, but this due to wind break or hedges mainly of *Acacia* *confusa*.

Sei mei Otake

*Calophyllum* (yabu)*Garcinia**Melanolepis*~~*Ficus retusa*~~*Pongamia* or *Vitex caprae**Pouteria**Ficus*

laurae?

*Ficus* (large lf. sprout b.)

Kurimatsu Otake

*Garcinia* (fukugi)  
(enomous)*Pouteria**Ficus retusa*laurae? (tabu) (bark used  
for incense)*Arenga**Diospyros**Pisonia aculeata* (viv.)*Murraya*

Kohamatsu Otake

laurae. (tabu)

*Garcinia**Pouteria**Diospyros**Melanolepis**Ficus gibbosa**Ficus retusa**Livistona*Alocasia very abundant  
large rock outcrop*Portulaca pilosa*(girohse gusa) brought  
in by a person named  
Girohu. Has become a pest.*Artemisia* (native) juice  
used for stomach aches.  
(nupan(Y))*Phaseolus*"ryohku zu" used for  
green beansbean sprouts. Taken on  
long voyages for trophus  
where fresh vegetables  
otherwise unobtainable.*Erythrina*"kinashii(T)" "imachii(I,O)"  
wood for construction

A few areca, but not used.

*Codiaeum*, *Ocallypha amentacea*,  
*Ipomoea* erecta, *Alternanthera*  
*peruviana*, *Canna*, *Tagetes*,  
*Rosa*, *Ficus strobila*, *Acacia*  
*confusa*, *Erythrina*, as  
ornamentals around school.*Piper* sp. growing on  
walls. Young leaves used  
cooked with rice. Rip fruit  
dried and used as pepper.

neither wet or dry rice cultivation on Taketomi. Soil is shallow. Water is short.

Even drinking water is a problem. When rains are plentiful some well water is used. Some rain is stored in cisterns. Otherwise water must be brought from Ishigaki.

Ramie is commonly cultivated, also mung beans, sweet potatoes, sugar cane. Black sugar like panela is produced. Bananas are common, especially around villages. When they are not destroyed by typhoons enough are produced to ship to Ishigaki.

Mr. Yonagumi, village chief, supplied most of the above information that could not be gained by superficial direct observation. He says there are some habu here.

Weeds in fields and along paths:

*Euphorbia heterophylla*  
*Bidens pilosa*  
*Liegesbeekia orientalis*  
*Letaria* sp.  
*Artemisia vulgaris*  
*Solanum aculeatissimum*  
*Sporopholus elongatus*  
*Couyza canadensis*  
*Euphorbia hirta*  
*Couyza canadensis*  
*Kalanchoe pinnata*  
*Zochrema nivea*  
*Lonchus*  
*Digitaria*  
*Verbena*  
*Emilia sonchifolia*  
*Cardiospermum*  
*Cyperus rotundus*  
*Echinochloa colnum*  
*Euphorbia hirta*  
*Cleusine indica*  
*Lynedrella nodiflora*  
*Gynura*  
*Imperata cylindrica*  
*Artemisia*  
*Brayya*  
*Letaria*

On rock piles and  
outcrops between the  
fields Cycas is generally  
common, but more so  
at lower elevations.

~~(127)~~ Higher, Musa sp., Miscanthus  
sp., etc. are also very common.

Shrubs toward east end.

Garcinia  
Ficus retusa  
Lauraceae.

(129) (Photos 705-25)  
(nos. 129-131)  
Diospyros  
Canis  
Terminalia catappa  
Podocarpus  
Arenga (forming thick undergrowth)  
Melanocephalus  
Elaeocarpus  
Psychotria  
Pouteria Rhaphidophora

Another farther east.

(130) Diospyros, Garcinia,  
Melanocephalus, Melia,  
Murraya, Ficus  
retusa, Bravaisia  
Lauraceae, Canis  
Rhaphidophora, Psychotria  
undergrowth of Arenga  
Pouteria, Elaeodendron,  
Diospyros pinnata? Hibiscus  
tiliaefolius

(131)

Toward east on limestone  
outcrops are thickets  
of Murraya, acacia,  
Voddalia, Thusa, Cycas,  
Miscanthus etc.

(132)

A few small plots of  
acacia confusa, in  
addition to much of  
it along trails and on  
outcrops and stone fences  
with Cycas, etc.

(133)

East of this more open  
country, still with  
outcrops, but fewer  
hedges and thickets.  
Some scattered Calophyllum  
and Erythrina trees.

Plants seen in thickets  
and hedgerows.

*Cycas revoluta*  
*Alpinia conica*  
*Psidium guajava*  
*Miscanthus floridulus*  
*Ampelopsis*  
*Arundo donax* ?  
*Clematis*  
*Vitis*

(134)

(Photo

865-25

and

150-17)

Beach scrub forest  
on east coast  
slopes toward beach  
From height of  
back from beach is  
mainly *Hernandia* and  
*Pandanus*, with  
*Calophyllum*, *Pouteria*  
Approaching beach  
*Haematoxylon* becomes dominant,  
with *Messerschmidia*,  
*Guettarda*, *Sophora*, *Agave*,  
*Premna*, *Wikstroemia*, *Pittosporum*

Along beach *Zygospia*,  
*Vigna*, *Euphorbia*,  
*Wedelia*, *Caseytha*,  
*Ischaemum*, *Ipermoea*  
*per-caprae*, *Thunbergia*,  
*Crinum*, *Chenopodium*,  
*Vitis*, *Spinifex*, *Ixeris*,  
*Sporobolus*, *Desvivium*, etc.  
form a belt back of the active beach <sup>at the</sup> wide  
south of the east point <sup>point</sup>.

(135)

~~near south end~~ is a  
shrub forest that is  
merely a very luxuriant  
place in the beach forest  
with giant *Calophyllum*,  
*Cyathium*, *Ficus retusa*,  
*Pouteria* and *Guettarda*  
trees. These trees are  
generally with very low  
trunks and widely spreading

limbs. The canopy is complete at about 10 m. There is little undergrowth but a good ground cover of *Nephrolepis*, *Flagellaria* some seedlings of the trees, esp. *Calophyllum*.

There is no actual edifice here, only an open sandy space, oval in outline, about 6 m. across, 10 m. long, with a round stone receptacle with sand for burning incense and a rotted stump with small vases.

It is a quiet and very impressive spot. Some Aedes mosquitoes, though, as in all other shrine forests.

(136) Near south end there is a low escarpment of rough limestone rising to 2-4 m. At its base is the forest is a layer of pumice up to 3 dm. thick.

The limestone is covered generally by ~~dead~~ scrub of

*Scorodonia*, *Dandanus*, *Guettarda*, *Messerschmidia*, *Premna*, *Ficus retusa* etc. *Lidium* on edges in pits.

Exposed parts have conspicuous mps from about high tide level to 3 m. ~~grass~~

A strongly developed erosional gamp about 15 m. wide at base, with solution basin and patches of *Limonium*

Here the ~~beach~~ forest or scrub is quite narrow. Where the exposed limestone ledge disappears, to the east, the forest gets wider. A dune ridge has accumulated on the outer side of it, just back from the beach.

This may be 1-1.5 m. high or even a little more, sloping gradually away from the highest part back of the top of the ledge.

Just back of the forest is a large area of *Miscanthus* and small thickets. The stand is irregular but generally

1956 Ryukyu Is.

thick, difficult to traverse, hiding rough limestone boulders and outcrops.

June 18 - e.s.e. of Hazama broken cultivated land with rough limestone outcrops, rock piles, and stone walls. <sup>B. Kinoshita DC.</sup>

37544 *Berchemia rhomboidea*  
 2 rare on rocky places

2 45 *Conyza canadensis*  
 common in cultivated land

2 46 ~~grass~~ *Erodium cicutarium* (Thunb.) Presl  
 occasional in fallow grassy field

1 47 *Adonis amurensis* L.  
 occasional in fallow grassy field

5 48 *Clematis*  
 common in thickets and on rock fences

2 49 *Imperata cylindrica* (var. <sup>magellanica</sup> Hull.)  
 dominant in fallow grassy field

2 50 *Zephyranthes* ~~sp.~~  
<sup>B. chinensis</sup> Hull.  
 dark in fallow grassy fields  
<sup>B. chinensis</sup> (Lamplugh) W.F.B.

3 51 *Euphorbia heterophylla* L.  
 common on roadsides and in fallow fields

5 52 *Abutilon indicum* (L.) Sweet  
 occasional along trails

20m.

prostrate.

spreading and ascending.

<sup>det. A.</sup>  
<sup>E.C. Hull.</sup>

extensive climbing vines, flowers cream white, very fragrant.

rhizomes deeply buried

flowers bright pink; locally believed that the blooming of this flower indicates that it will rain.

herb up to 0.8 m. tall, lower parts of bracts scarlet

shrub up to 1 m. tall, flowers orange.

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1956 Ryukyu Is.

*Euchitonia hispida* (L.) <sup>Crinod. epiphylloides</sup> var. <sup>Crinod. epiphylloides</sup> <sup>epiphylloides</sup> (Fenzl & Spiller)  
~~var. hispida~~37553 *Gynura*

2 common weed in fields

2 54 *Liegesbechis orientalis* L.  
common weed in fields2 55 *Lyndella nodiflora* (L.) Gaertn.  
common weed in fields2 56 *Murraya paniculata* (L.)  
common in thickets2 57 *Ampelopsis* <sup>trifoliolata</sup> var.  
common in thickets1 58 *Thusa*  
abundant in thickets2 59 *Verbena officinalis* L.  
common along paths2 60 *Digitaria sanguinalis* (L.) Dulac  
common in fields2 61 *Abutilon theophrasti* (L.) Sweet  
occasional along paths2 62 *Leucas*  
common in fields and  
rocky places.2 63 *Cardiospermum halicacabum* var.  
common along trails  
and edges of fields2 64 *Emilia sonchifolia* (L.) DC.  
common in fields2 65 *Bidens pilosa* var.  
common in fields1 66 *Lonchus* <sup>divaricata</sup> L.  
occasional along trails

1956 Ryukyu Is.

Bentham) S. Moore *Tabetomia* 1.

det. R. O. Beldner

135

2 erect, aromatic; disk  
red; tubes of flowers yellow  
2 54 flowers yellow.  
2 55 flowers yellowIshik. 2 shrub 1.5 m. tall  
leaves bright green  
2 vine, with greenish  
flowers and blue berries.  
2 58 small plant, 2 m. tall,  
"trunk" dull ~~brown~~ <sup>gray</sup>,  
bracts glaucous,  
bronze purple,  
flowers dull yellow.2 59 flowers bright lavender  
culms spreading

2 60 flowers white

*microcarpa* (B. B. K.) B. B.

2 61 climbing, flowers white

2 62 flowers purple  
not much exceeding involucre.  
2 63 disk yellow, rays  
short, white

June 18 - east of Hazama  
in edges of shrubs forest

37567 *Ehretia dicksonii* var. *japonica*  
common

68 *Psychotria luteola* (Houtt.)  
common in undergrowth

49 *Croton cuneigii* H.-A.  
common in undergrowth

70 *Carmona retusa*  
*Ehretia microphylla* Lam.  
occasional in undergrowth

71 *Elaeodendron* <sup>2</sup>  
*Eurycoma japonica* Thunb.  
occasional

72 *Diospyros ferrea* <sup>2</sup> var. *buseifolia*  
occasional

June 18 - Hazama  
in village

73 *Phaseolus lunatus*  
cultivated in small fields  
on coral limestone soil

74 *Artemisia capillaris* Thunb.  
common along paths

75 *Echinochloa colonum* (L.) Link  
weed in bear field

20 m.

Nakai

small tree, ripe fruit  
yellow. Wood used in  
construction  
"Kinashi" (Taketomi) "inashii"  
(Ishigaki, Okinawa)

shrub 2.5 m. tall;  
flowers greenish white; fruit immature;  
stipules small, triangular.

shrub 1 m. tall

shrub 1 m. tall; fruit  
immature.

large shrub or small tree,  
flowers pale green.  
small tree; fruit  
immature

20 m.

flowers greenish yellow,  
keel twisted.

"nyoku zu" (J) (b. green bean)  
"said to be used for bean  
sprouts, also made into  
sweet soup."

erect herb, branched  
from base, somewhat  
aromatic.

culms ascending

138

1956 Ryukyu Is.

37576 *Solanum aculeatissimum* Jacq.  
2 edges of thickets3 77 *Piper* <sup>hawaii Maxim.</sup> very common climbing on stone walls2 78 *Boerhavia mutabilis* R.Br. around stone steps in ~~no~~ public place4 79 *Portulaca pilosa* L. common in paths and fields.aibamu tabi,  
June 18 near east point  
of island2 80 *Hibiscus tiliaceus* L. common in2 81 <sup>accord.</sup> *Bignonia laurina* (L.) Martius common on inner edge of3 82 *Toddalia asiatica* Lam. common generally in thickets and on inner edge of

Taketomi I.

139

68 edges of thickets.  
herb 0.8 m. tall, ripe fruit scarlet.70 71 vine fruit immature, (red when ripe), "pistol" (T) young tips ~~as~~ of plant used to flavor rice, mature fruit dried and used for pepper.

72 prostrate; flowers pinkish, white; leaves purple, beneath.

73 74 prostrate, leaves fleshy; flowers magenta, about 6-8 mm. across. Said to have been brought in as an ornamental but now has spread and is a pest. Brought by one Jimoku, so is called "Jimoku-gusa".

2-3 m.

80 small tree, flowers yellow with maroon center, turning reddish, vine climbing in bushes, flowers yellow, immature fruit with white stripes. herbage with numerous slender branched scrambling shrub.

140

1954 Ryukyu Is.

37573 *Vitis* <sup>Panac. Root.</sup> <sub>in thickets</sub>  
2 occasional on inner edge of  
2 84 *Wedelia biflora* (L.) DC  
common on edges of  
3 85 *Colubrina asiatica* (L.) Brongn  
occasional in edges of  
2 86 *Allophylus* <sup>Lampros. (2)</sup> Bl  
occasional in edges of  
2 87 *Hernandia sonora* L  
dominant in

some

at top of sandy beach

2 88 *Ischaemum muticum*  
common  
2 89 *Angelica japonica* A. Gray  
occasional  
2 90 *Crinum asiaticum* <sup>var.</sup> <sub>*japonicum* Baker</sub>  
occasional

*Chamissoa atata* (G. Forst.) Gray

2 91 *Euphorbia chamaissoides* Boiss.  
common  
2 92 *Spissofex littoreus* (Burm. f.) Munro  
common  
1 93 *Chenopodium albuminutum* Willd.  
occasional  
2 94 *Cirsium buriule* A. Gray  
common  
3 95 *Vigna mahnii* Burm.  
common <sup>Phaseolus</sup>  
2 96 *Lotus descurvatum* (Portulacaria)  
common  
2 97 *Lotus australis* Andr.  
common

Taketomi I.

141

2 94 *Scandix pecten-veneris* L.  
scrambling aromatic  
herb, flowers yellow.  
2 95 low shrub, flowers white  
2 96 small tree 4-5 m. tall,  
flowers whitish.

1-2 m.

2 97 prostrate, branches  
ascending to erect.  
erect herb 1.5 m. tall,  
now dry and leafless.  
2 98 rosettes of curved leaves,  
erect scapes to 0.8 m. tall,  
flowers white, stamens  
and style purple.  
2 99 stems spreading to  
ascending.  
2 100 forming loose mats  
erect.  
2 101 heads bright purple.  
2 102 prostrate, forming  
huge mats; flowers yellow.  
2 103 prostrate, fleshy  
flowers pink.  
2 104 prostrate, flowers white

142

1956 Ryukyu Is.

sants Busashi,  
 June 13. - south coast  
 of island  
 on pitted eroded edges  
 of limestone terrace  
 37597a *Ledum formosanum* N.C.B.  
 locally common.

Hayama Village  
*Lagenaria* cult.  
 on walls

3 m.

Tabetomi I.

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fleshy, flowers yellow.

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June 19 - Kintonanisaka  
 extensive sand flat  
 covered by ~~low~~ scrub  
 tangled mass of *Scorodendron*,  
*Pandanus*, *Guettarda*,  
*Clerodendrum*, *Pouteria*,  
*Pittosporum*, *Allophylus*,  
*Flagellaria*, *Sophora*,

139

south of here is a dune  
 ridge 1-2 m. high. On  
 this is a low forest of  
*Hernandia*, *Ficus*, *Pouteria*,  
*Pandanus*, *Clerodendron*,  
*Scorodendron*, *Messerschmidia*,  
~~Pithecellobium~~ *Guettarda*, *Hibiscus*,  
*Premna*, ~~et~~ *Calophyllum*, etc.  
 Back of this is a strip  
 of *Leucaena* thickets  
 and cultivated patches.

144

1950 Ryukyu Is.

This strip of forest is generally only 50-100 m. wide.

Near its north end is a trail leading in to a primitive shrine, only a circle of stones with a hollowed out cylindrical one in it, sand for burning incense. This forest around the shrine is principally *Hernandia*, some *Guttarda*, *Ficus*, and *Pouteria*. It is 10-12 m. high, with loose undergrowth of *Alaordeda*, *Morinda*, etc.

up to  
5 dm.  
5 ft.

140

Southward the dune ridge is replaced by a rough limestone terrace, covered by essentially the same forest.

At the first good exposure of this the sand beach sounds hollow when tramped upon.

144

1950 Ryukyu Is.

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Near its north end is a trail leading in to a primitive shrine, only a circle of stones with a hollowed out cylindrical one in it, sand for burning incense. This forest around the shrine is principally *Hernandia*, some *Guttarda*, *Ficus*, and *Pouteria*. It is 10-12 m. high, with loose undergrowth of *Alaordeda*, *Morinda*, etc.

up to  
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5 ft.

140

Southward the dune ridge is replaced by a rough limestone terrace, covered by essentially the same forest.

At the first good exposure of this the sand beach sounds hollow when tramped upon.

Taketomi I.

145

Along the whole southwest coast the forest comes down to the top of the beach, with little or no heathaceous growth. No sand flat with grass, etc. as on the other side. On the north side of Kuntomorisaki proper there is a rather broad strip of *Spinifex*, *Thunbergia*, etc.

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Then along the west coast there is solid beach, rock, clearing to the low beach ridge which is covered by tall scrub. North the ridge is replaced by a ledge of limestone, still with a broad ramp of smooth beachrock.

The scrub along this coast is 2-4 m. high, about the same composition as that south of the point. A few *Cahuassing* and very rarely, *Thespesia*. A rather narrow strip, backed by *Leucaena*, and *Acacia*.

146

1950 Ryukyu Is.

East of village -  
cultivated patches  
and considerable  
thickets of *Calophyllum*.

147 Cycas, *Melanolepis*,  
*Thalassia*, *Boehmeria*,  
*Acacia*, *confusa*.  
Musa, Melia, *Ficus* (swampy),  
*Pandanus* (abundant  
locally)

Just back of the littoral  
forest is dense growth  
of *Lemnaceae*. Several  
small patches of  
densely planted *Calophyllum*,  
also one of *P. docynia*.

Thick undergrowth of  
*Cycas* in one *Calophyllum*  
patch. *Lemnaceae* in others  
has been cut out.

Littoral forest very dense  
*Calophyllum*, *Fernandia*,  
*Pandanus*, *Hibiscus*,  
about 4-5 m high. Comes  
close to sea wall.

147

Tabroni Is.

147

June 19 - Taketomi island  
The vegetation may  
be mapped, though not  
too satisfactorily, by  
setting up the following  
units (outlined on photo  
#150-27):

1. Village area - streets  
lined with stone walls  
around the house-lots.  
These <sup>are</sup> covered by *Lippe* sp.  
*Morus* trees (about 4 m. tall)  
*Quercus* and *Garcinia*, and *Pithecellobium*  
trees, tending to be taller,  
grow along the streets  
just inside the stone  
walls. Inside the walls,  
also, are garden plots  
and many ornamentals.  
Vacant lots have patches  
of sweet potatoes, young  
beans, etc.

2. Open cultivated area -  
a patchwork of small  
cultivated plots, separated  
by stone walls, outcrops,  
hedges, etc. The stone  
walls and outcrops are  
covered by clumps of  
*Cyrtosperma revoluta* and thickets  
of *Acacia* and various  
shrubs. The principal

crop is sugar cane, many  
beans, sweet potatoes, sesame,  
millet, <sup>bananas</sup> *gramine*, in about  
order named.

3. Cultivated area with  
thickets: similar to  
unit #2 except that  
as much as 25% of the  
area may be covered by  
thickets and small  
plantings of *Acacia*  
*conspersa*, *Sesbania*  
*glauca*, and various  
brushes, *Miscanthus*,  
etc. *Melanolepis* is common.

4. Sword grass -  
This seems to be  
abandoned cultivated  
land, where the rock  
outcrops are too numerous  
and soil is too shallow  
even for these people to  
farm successfully.  
The area is a mixture  
of dense *Miscanthus*  
up to 2-3 m. tall and  
woody thickets. Progress  
through this is very  
slow and uncomfortable.  
Hidden rock outcrops,  
boulders, and holes  
make walking even more painful.

5. littoral forest  
and scrub.

This is a strip around the coast, on sand and rough limestone, of tangled growth of various strand species, in place forming a scrub 1-2 m. high, in other places a low forest, up to 10 m.

The composition varies. The scrubby aspects are usually dominated by *Leucosia* serviced with various accessory species. The ~~so~~ forested part is most often dominated by *Fernandia*, but in some places by *Coutaria*, *Ficus*, or *Pandanus*.

The seaward side usually slopes smoothly toward the beach, suggesting that wind and spray are important elements in the local climate.

On the southeast side and locally elsewhere there is a herbaceous strip, usually on level sand, between the edge of the scrub and the top of the beach. Here may be found *Vitis*, *Ipomoea pes-caprae*

*Spinifex*, *Thuraea*, *Ixoris*, *Sporobolus*, *Zygia*, etc.

## 6. shrub forests:

There are small patches of usually dense woods containing some of the largest trees to be found on the island. The composition varies greatly. *Garcinia*, *Ficus*, "tabu", *Melanolepis*, *Diospyros*, *Calophyllum* and *Coutaria* are the trees most usually found.

Weeds seen, not collected:

*Cupharis prostrata*  
*E. hirta*  
*Portulaca oleracea*  
*Kalanchoe pinnata*  
*melilotus*

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1956 Ryukyu Is.

Omasu

June 19, Northwest coast

on sand above sea wall

37598 *Sporocaea pes-caprae* var. *brasiliensis*  
3 common5 99 *Sporocaea* <sup>litoralis</sup> Bl.  
common <sup>gracilis R. Br.</sup>37600 *Zygis tenuipolia* Willd.  
common3 01 *Thunera involuta* (Forst.) R. Br.  
commonJune 19 - east of Hayama  
2 or *Polyphodium scolopendria*  
located on piles of limestone  
between fields.June 19 - coast west of  
Hayama2 03 *Pemphis acidula* Forst.  
rare on eroded limestone  
about high tide level2 04 *Clerodendrum inerme* (L.) Gaertn.  
common, edge of littoral scrub3 05 *Vitis trifolia* var. <sup>americana</sup> Don.  
common, at edge of  
littoral scrubor ~~part~~June 19 - near Kurotomin-saku  
littoral scrub forest2 06 *Raphiolepis* <sup>subcordata</sup> (Koidz.) Nakai  
rare in edge of

Taketomi!

153

2 m.

trailing; flowers purple,  
collapsing about mid-  
afternoon.trailing, flowers rose  
purple, much deeper  
in throat.

OK A Shrub

5.

trailing, forming loose  
mats.

20 m.

Burm. f. fronds erect.

*Marsupium scolopendria* (Burm. f.) Gaert.

1 m.

prostrate shrub,  
flowers white.1 m. shrub 1 m. tall,  
flowers white.prostrate, flowers  
blue-violet.2-3  
0 m.shrub 2 m. tall,  
fruit immature

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37607 *Scaevola sericea* Vahl  
 2 common in edge of  
 2 08 *Messerschmidia argentea* (L.f.) Johnst. <sup>det. T. Koyama 1959</sup>  
 common in edge of  
 2 09 *Pouteria oblonga* (A. Br.) Benth.  
 common in  
 2 10 *Scaevola sericea* Vahl  
 common in edge of  
 2 11 *Premna obtusifolia* R. Br.  
 occasional in edge of  
 12 ~~Wikstroemia elliptica~~  
 2 12 *Wikstroemia elliptica*  
 rare in edge of <sup>W. refusa A. Gray</sup>  
 2 13 *Lepturus repens* var.  
 occasional ~~in~~ in  
 sand at edge of  
 2 14 *Morinda citrifolia* L.  
 in undergrowth in  
 3 15 *Pandanus tectorius* var.  
 common in <sup>Taketomi</sup> ~~under~~!  
 3 16 *Smilax chinensis* var. <sup>det. T. Koyama 1959</sup> ~~Kunze~~ Takeyoshi & Inoue  
 rare at inner edge of  
 5 17 *Oplismenus* <sup>patens</sup> ~~hirsutus~~ Honda  
 common in inner edge of  
 3 18 *Ficus ingens*  
 rare at inner edge of <sup>syn. *F. japonica* Miq.</sup>  
 2 19 *Boehmeria* <sup>Japanica</sup> var. <sup>det. A. Gray 1959</sup> *canescens* (Maxim.)  
 rare in undergrowth,  
 at inner edge of  
 2 20 *Guettarda speciosa* L.  
 important component of  
 2 21 *Sophora tomentosa* L.  
 occasional at edge of

Taketomi I.

155

7-3 17 shrub 1 m. tall,  
 flowers purple  
 18 shrub 1.5 m. tall,  
 flowers white.  
 19 tree ~~8~~ m. tall,  
 fruit immature.  
 10 shrub 2 m. tall,  
 flowers white.  
 11 shrub 1 m. tall;  
 flowers pale green,  
 fruit immature.  
 12 sterile shrub, 1 m. tall.  
 13 sterile shrub 1.5 m. tall  
 14 small tree 3 m. tall, stems  
 bracts cream white.  
 15 vine, tangled in shrubs;  
 fruit immature.  
 16 culms almost erect,  
 decumbent bases  
 on stilt roots.  
 17 small tree 4 m. tall, figs pinkish.  
 18 weak shrub  
 19 tree 5 m. tall,  
 flowers white, fragrant  
 20 shrub 1.5 m. tall

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1956 Ryukyu Is.

37627 *Pandanus tectorius* var.  
common in <sup>limestone</sup> walls?

2 23 *Terminalia catappa* L.  
rare in

2 24 *Pittosporum tobira* (Willd.) Ait.  
occasional in scrub  
margin

June 19 - coast west of  
Hazama, ~~edge of scrub~~  
in edge of scrub  
sand flat

2 25 *Ipomoea indica* (Burm. f.)  
rare <sup>I. conyzoides R. Br.</sup>

2 26 *Lysimachia mauritiana*  
occasional

2 27 *Paspalum vaginatum* Swartz  
local along beach

1 28 *Ixeris japonica* (Burm.) Nakai?  
local along beach

1 29 *Raphanus*  
occasional along beach  
~~30 (acanth.)~~

June 19 - Hazama  
around village

2 30 (acanth.) *Justicia procumbens* L. var. *procumbens*  
common in yard

2 31 *Commelina auriculata* L.  
common on roadsides

2 32 *Polygonum diffusum* L.  
rhizomes climbing over walls

2 33 *Commelina* ~~diffusa~~ <sup>c. diffusa</sup> ~~diffusa~~ common on roadsides

Taketomi I.

157

small tree 3 m. tall.  
fruit yellow when ripe.

shrub or small tree,  
3 m. tall, bud only.

shrub 1 m. tall, fruit  
immature

1-2 m.

vine tangled in scrub;  
flowers blue, turning purple.

flowers white.

culms ascending.

rhizomes deeply buried.

flowers purple; plants  
mostly dry and fruiting.

20 m

det. E.C.  
Lamond

det. T.R.F.

flowers pinkish.

plant creeping,  
flowers blue, 2 petals  
large.

vine; flowers white.

prostrate, flower blue, 3 petals  
large.

det.  
T.R.F.

158

1956 Ryukyu Is

June 19 - <sup>Omasu</sup> ~~Southwest~~  
northeast of Hayama  
37634 *Cykas revoluta* L.  
5 very common on  
walls and limestone  
outcrops.

Tabetomi I.

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5 m.

OK trunk 1.5 m. high,  
cone erect. Leaves few  
immediately around

June 20 - end of Kabira peninsula  
back of Ishi-saki

(144) Pasture on flat ground  
with largest part of area  
in mixed palatable grass  
and herbs, with bunches  
of *Imperata* scarcely  
eaten. At foot of volcanic  
hills.

(145) Rocky hill, mainly grassy  
with principally *Imperata*,  
*Rosa*, etc. Scattered  
*Cycas* on slopes and  
especially near the top.  
The rock is a volcanic  
breccia. Many herbs  
of various sorts in  
grass and between  
rocks.

(146) almost pure stands of  
*Cycas* on very rocky hills.  
Some *Riptaria*, *Mallotus* etc.  
apparently burned recently  
(dead bushes)

(147) Hill with mixed  
broad-leaf woods. - *Ficus*  
*retusa*, *F. rugosa*, *Hibiscus*  
*tiliaceus*, *Macaranga*, *Pontia*  
*Dioscorea* in second story  
much *alcaena* and *Cycas*

(148) strip of littoral forest,  
dominantly *Hernandia*, but  
on sea side mostly *Pandanus*,  
with *Scavo*, *Messerschmidia*,  
*Pontia* etc.  
Mostly on a dry ridge  
2-3 m. high, but here and  
there projections of undercut limestone  
hills with scattering of  
bushes in grass and patches  
of almost pure *Cycas*  
on steeper more rocky places.

(149) (150) Cliffs and bluffs on south  
side covered with thicket,  
more level ground above grassy,  
pastured, in places with  
bunchy *Imperata*.

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1950 Ryukyu Is.

June 20 - <sup>Takamai, new</sup> end of Kabira Peninsula, back of Ishi-saku or knobs of volcanic rock

37635 (hab.) *Artemisia undata* (L.) O. Kt. in thickets

3 36 *Physalis peruviana* L. var. aff. among cycads in pasture

1 37 *Euphorbia* <sup>(Chamaesyce parviflora (Vahl) Hemsl.)</sup> grassy pasture

6 38 *Aquilegia pilosa* Ledeb. in edge of patch of woods

2 39 *Panicum* <sup>(Cynodon dactylon (L.) Beauvois)</sup> in rocky pasture

4 40 (crown) *Melathria undulata* (L.) Cogn. climbing on rocks

5 41 (grass) <sup>Brychisca eruciformis (T. & G.)</sup> in grassy pasture

2 42 *Torilis*? <sup>T. tricadiata?</sup> among rocks in pasture

2 43 *Hedysarum* <sup>stelliflorum</sup> St. among rocks in pasture

1 44 *Leucas* among rocks

\* 45 *Satureja* <sup>Clinopodium chinense</sup> O. Kt. among rocks

2 46 *Crotonalus alsinoides* L. common among rocks

2 47 *Graphalium japonicum*? <sup>Thunb.</sup> rare among rocks

same, inner edge of littoral forest

5 48 *Antidesma pentandrum* var. *bacatum* Miq. rare at

163

Ishigaki Is.

20 m. ↓ flowers pale greenish yellow

37 flowers white.

40 m. ↓ flowers yellow.

40 m. ↑ Trailing, ~~sp. fixed.~~

↓ (much) <sup>41</sup> flowers white.

42 flowers white.

43 flowers white.

80 m. ↓ flowers white

↓ 44 flowers rose-purple.

45 flowers bluish.

2-3 m. ↓ 46 shrub ~ m. tall; fruit, green, pleasantly acid.

164

1956 Ryukyu Is.

June 20 - YCAT Compound  
3 km. n.w. of Ishigaki City  
weeds in disturbed open ground

37649 2 *Cendrus echinatus* L.

common

2 50 *Euphorbia hirta*  
common <sup>Chamoyee hirta (L.) Millsp.</sup>

2 51 *Cyperus rotundus* L. det. J. H. Kamm  
small colonies

5 52 (~~50~~ 56?) *Justicia procumbens* var. *torreana* Yamam.  
common

5 53 *Solanum nigrum* L.  
common

1-2 m.

11  
12

det. E. C.  
Leonard

2 flower lavender pink  
with 3-lobed purple  
mark in center of lip

11 flower white,  
ripe fruit black.

165

June 21 - ridge above Ozata  
west of Kara-dake

Forest on ridge of schist  
the lowest parts of  
this are dense and tangled  
and scrubby, perhaps  
are secondary. (60-100 m.)

(152)

(Photo  
97814)

(153)

The main part of the  
ridge is in a mixed  
forest that is dominantly  
Ficus of several species  
but has many Lannea  
Raphiolepis, Randia etc.  
Thick undergrowth of  
Arenga, Psychotria,  
Lasiandra, Alocasia,  
etc. Lannea, Lannea,  
many ferns, lianas,  
such as Flagellaria, etc.  
(100-150 m.)

Upward along the ridge  
(150-180 m.)  
the Ficus becomes less  
dominant but still common.  
Diospyros becomes

commoner, also Ardisia,  
and many other trees  
come in. A little  
Fernarietia and long  
woolly vine.  
Some Ilaeocarpus, Schefflera,

Lannea, thick  
undergrowth of  
Psychotria, Arenga  
lauraceous shrub  
and seedlings, many  
ferns and Centotheca  
on ground.

On next ridge over  
(180-200 m.)  
the Ficus becomes less  
common, but still present.  
Diospyros, Ardisia,  
Lannea, Pouteria,  
Ilaeocarpus, ~~Bischoffia~~,  
Dyera, Mallotus philippinus,  
some Garcinia. One  
Dendropanax seen, small.  
Some secondary species - e.g.  
Macaranga, Mallotus,  
Bischoffia, etc. probably  
the result of the intensive  
logging that is obvious  
here.

Ferns cover the ground  
under a loose shrub  
layer of Psychotria,  
Lasiandra, etc.  
Tectaria most abundant.  
Some Asplenium nidus  
in trees. Avoids climbing  
in trees - perhaps Epipremnum.

(200 m.)  
 Here on a long more or  
 less level ridge *Quercus*  
 common in considerable  
 numbers. Some *Elaeocarpus*,  
*Dendropanax*, much *Ardisia*,  
*Diaphoros*, many *Lauraceae*.  
 Ferns abundant. Some  
*Fragaria*.

On ridge the forest is about  
 10-12 (-14) m. tall, a few  
 trees to 2.5-3 dm. mostly  
 10-20 cm., some larger  
 trees.

Undergrowth rather  
 thin - *Psychotria*, *Antidesma*,  
*Curcuma*, many ferns.

ntana Yama,  
 June 21 - ridge above Ogata,  
 west of Kamakura

37654 in degraded, tangled  
 forest, dominantly *Ficus*  
*Smilax* <sup>*leptophylla*</sup> <sub>*japonica* Kunth</sub>  
 occasional  
 3 35 *Fagara* <sup>*impedita* (Champ.) Engl. (= *Zanthoxylum*  
<sub>*impeditum* Champ.</sub>) occasional</sup>

2 56 *Tubocapsicum*?  
 rare along trail

3 57 *Centotheca lappacea*  
 common locally <sup>*Thlaspium* Schneid.</sup>

3 58 *Arenga tremula* (Blanco) Becc.  
 common in undergrowth  
 A. *angustifolia* Becc. 24 H.B. 1922

100-150 m.  
 vine climbing in trees,  
 fruit immature.  
 - small tree, tangled  
 in mass of vegetation,  
 fruit green.  
 - branched herb, 0.8 m. tall,  
 fruit bright red, soft.  
 57 prostrate to ascending  
 several stems from base  
 inflorescence reaching  
 about 2 m. high, leaves 3-4,  
 stem ~~adpressed~~ covered by  
 sheathing leaf bases.

same - mixed broad-leaf  
evergreen forest on broad  
ridge tops.

37659 1 *Flagellaria indica* L.  
common generally

2 60 *Diospyros* <sup>mauritana</sup> Bl.  
common generally

5 61 *Smilax* <sup>tekeensis</sup> <sub>det. T. Koyama 1959</sub> *spatulata* Kunth  
common

5 62 *Citrus depressa* Hayata  
occasional in understory

5 63 (ordid) *Calanthe lanicaria* Schl.  
occasional, terrestrial

2 64 *Camellia japonica* (var. *maxima* Makino)  
occasional

5 65 *Ficus* <sup>angulata</sup> Burm.  
occasional

5 66 *Ophiorrhiza* <sup>linkiana</sup> Hayata  
common locally

2 67 (ordid) *Helicia oblongifolia* Bl.  
rare, terrestrial, <sup>det. L.A. Jones</sup>

5 68 *Neolitsea* <sup>Locularis</sup> *canifolia* DC.  
occasional

3 69 ~~fern~~ *Chamaesyce subglandulosa* (Hance) Ching  
common

same - in montane forest,  
with much guava

5 70 *Antidesma* <sup>japonicum</sup> S. & Z.  
common in undergrowth

5 71 *Ficus retusa* var. *nitida* (Thunb.) <sup>det. K.</sup> Ching  
occasional

150-200m.

66 69 tangled vine climbing  
into tree-tops; fruit immature.

60 small tree, fruit dull  
brownish orange

67 vine climbing in trees,  
fruit immature.

62 small tree 4 m. tall,  
fruit immature, aromatic.

63 in small clumps,  
flowers white

68 small tree, fruit immature.

65 large spreading tree  
with single, somewhat  
buttressed trunk  
no aerial roots, yellow fruit.

66 suffrutescent, 4 dm. tall,  
flowers white.

67 stems twisting,  
flowers minute, orange.

68 small tree, fruit immature

200-225m.

70 shrub 1 m. tall, fruit  
immature

71 large spreading tree  
with complex trunk

172

1956

37672 *Ardisia* *quinquagyna* Bl.  
 3 common  
 3 73 *Vittaria elongata* Swartz  
 epiphytic  
 5 74 *Nephrolepis biserrata* (Swartz) Solms  
 epiphytic, ~~fronds pendent~~  
 6 75 *Ardisia* *schiedii* Mez.  
 common

173

shrub 2 m. tall

74 fronds pendent

75 small tree 4 m. tall,  
 branches disarticulating.

June 22 - near Banna Lake

(157) n.w. base. Pine wood, fairly good stand on gently sloping terrace - trees up to 20 m. tall and 2-3 dm. dbh. spaced 3-5 m.

Very few shrubs beneath, sparse stand of *Miscanthus*, some *Farfallaria conjugans*, with *Elephantopus mollis*.

Has been somewhat pastured.

(158) On lower slopes a tangled scrubby mass of *Mallotus glabratus*, *Wendlandia*, *Schima* and other secondary shrubs with *Miscanthus*. A little pine and *Acaria*.

(159)

upper slopes and summit are covered by a low scrubby very dense wood of trees 3-5 m. tall mostly things such as *Guadua*, *Lelie*, *Diodia*, *Elaeocarpus*, ~~too~~ etc. with rather small coriaceous leaves.

(160)

On the inner side of the rather V shaped series of ridges larger trees been more abundant on the mid-slopes and tree ferns are common in ravines.

On the main ridge the low forest is very dense, 4-5 m. tall. *Quercus* is common, also *Camellia*, *Ardisia* "tabu", *Trema*, *Mallotus*, *Macaranga*, *Diospyros*, *Dendropanax*, *Flex*, *Ficus* 3 spp. *Rhus*, *Wendlandia*, *Phytolanthus*, *Eugenia*, *Psychotria*, *Cinnamomum*, *Euscaphia*, *Antidesma*, *Styrax*, *Licania*

The stems are mostly 2-5 cm. d.b.h. a few much larger, then mostly *quercus*. The spacing is mostly 0.5-1 m.

On the ground are scattered ferns (*Polystichum*), tufts of sedge (*Scirpus*?) and *Coussarea alpina*.

Some *Freylinetia* in saddle, also much *Colysis*.

*Yamagi*, brown with dark bands, a *Ardisia*.

Contour trail around to east from beyond saddle - on steeper slopes the vegetation does not differ much from on ridge, except that stature may be a little greater and ferns (*Colysis*) locally more abundant.

This trail leads around to what almost amounts to a terrace - an area of very gentle slope. Here the trees are taller, up to 10 or more m. and more widely spaced. Composition does not differ conspicuously. More *Ficus* here but not dominant. *Quercus* still common, *Freylinetia* common but not abundant.

Another trail from bottom of saddle around to west and south through essentially similar vegetation to that on ridge, on steep slope. Down somewhat the stature is some higher. *Ardisia* more common.

Two yamagi seen on Smilax. These were brighter brown than usual and decorated with 2 rows of yellow and black points. The two transverse rows of bands of black hair on anterior are hidden when animal is quiet, exerted when excited. Crawled off Smilax onto trunk of *Cinnamomum doederleinii*.

June 22 - <sup>Koya yama</sup> Pass west of Banna-dake

in low coppice-like wood

37676 5 *Dianella ensifolia* (L.) DC. common on walls of road-cut on ~~soil~~ weathered schist.

5 77 *Stephanis japonica* (Thunb.) Miq. edge of wood

6 78 *Prunella rotunda* Desv. occasional

6 79 *Vaccinium knightii* A. Gray occasional

6 80 *Alnus formosana* (Benth.) Mabb. common, especially in low or moist spots

8 81 *Vitis trifolia* L. on wall of road cut

In Pass, on west side, is a coppice-like growth of *Quercus*, *Pternstroemia*, *Lachima*, *Alnus*, *Mysorella* (?), laurel, etc.

about 3-4 m. tall, all apparently clumps of stump sprouts.

50m. 50m. 50m.

flowers light blue, ripe fruit bluish purple.

vine twining in trees, fruit red.

small tree 4 m. tall, fruit green.

slender shrub 2.5 m. tall; fruit immature

small tree

shrub 1 m. tall, flowers deep lavender to violet.

178

1954 Ryukyu Is  
Tsukuratsaki,  
June 22 - s. w. base of  
Bana-dake  
*Ussuria* <sup>affinis</sup> *L.*  
roadside

Muibaga,  
June 22 - s.w. ridge  
of Banna-dake  
on roadsides in scrubby  
woods.

5 83 *Sceloenia tenetaria* (L.) Farw. common in deep grass  
8 84 *Smilax sebeana* (L.) <sup>det. T. Linsley</sup> 1954 occasional

6 85 occasional in pine woods

86 *Glochidion*  
*commune*

Taramani,  
June 22, Banna-dale,  
~~in~~ scrubby woods near  
summit

2 87 Maciliae thunbergi S. & Z.  
rare

5 88 *Ficus erecta* var. *berbeyana* (H. & N.) King  
occasional

5 89 *Osmanthus* *bracteatus* Matsum.  
occasional

5 90 *Osmanthus heterophyllus* Matsum.  
occasional

179

Yesterdays  
writing  
recorded  
to you

19 white

b  
m. by

it  
ably

h green

iii

Yunnan  
Want to  
record this  
in your  
journal.

matchbook.

I haven't determined the var. yet

Forsberg 37685 is  
*Daphne phyllocladum glaucescens*  
ssp. *teijsmannii* (Zoll.)

Huang

Det. E. H. Walker

Det. E. H. Walker

0  
and  
Ch'ien, Ch'ung-shu; Wu, Ch'eng-i; Ch'en, Ch'ang-t'u.

1956

The vegetation types of  
China. Act. Geogr. Sin. 22: 37-92.

In Chinese, with English summary; describes 12 forest,  
steppe, meadow and desert types.

178

1956 Ryukyu Is

Tsukuratsaki,

33 June 22 - s. w. base of  
Banna-dake37672 *Jussiaea effusa* L.  
5 roadsideMuibaga,  
June 22 - s. w. ridge  
of Banna-dake  
on roadsides in scrubby  
woods.5 83 *Hedera ternata* (L.) Farwell

common in deep grass

8 84 *Smilax celebica* (L.) King <sup>det. T. S. Gray 1954</sup>  
occasional

6 85 occasional in pine woods

86 *Glochidion*  
commonTaramani,  
June 22 - Banna-dake,  
~~in~~ scrubby woods near  
summit2 87 *Mitchella repens* L. 22  
rare ~~in~~5 88 *Ficus erecta* var. *buchananii* (H. & A.) King  
occasional5 89 *Osmanthus heterophyllus* Matsum.  
occasional5 90 *Osmanthus heterophyllus* Matsum.  
occasional

80 m.

179

much branched herb  
1.5 m. tall, petals  
yellow, emarginate, 1 cm. long

180 m.

14 forming tangle; fruit  
yellow-green, probably  
nearly mature.15 small tree, fruit  
immature.16 shrub 3 m. tall;  
flowers yellow.

220 m.

17 shrub 2 m. tall  
inflorescence red, fruit dark green18 shrub 2 m. tall,  
figs greenish.19 small tree, flowers  
pale yellowish green.  
fragrant with a sourish  
sweet odor.20 small tree, flowers  
white

180

1956 Ryukyu Is.

37691 *Ilex* <sup>Washingtoni</sup> *Loe.*  
5 occasional

1 92 *Pasetta?* <sup>Ternstroemia</sup>  
rare

2 93 *Morinda umbellata* L.  
rare

5 94 *Ilex* <sup>maximowicziana</sup> *Loe.*, stiff.  
occasional

6 95 *Psychotria* *watsonii* *Drimie*  
rare

6 96 *Premna obtusifolia* A. Nels.  
occasional

June 22 - north ridge  
of ~~Baonna~~ <sup>now</sup> ~~Take~~ <sup>Taraman</sup>  
int. scrubby dense moist  
forest

6 97 *Ardisia*  
common

98 *Rhus succedanea* L.  
common

181

small tree, fruit immature.

✓ shrub; buds white.

✓ vine, climbing in trees.

44 small tree; fruit  
immature.

45 small tree; fruit  
immature.

✓ of small tree, aromatic  
when broken; flowers  
pale green.

200 m.

✓ slender shrub 2 m.  
tall; fruit immature.

✓ small tree, leaves  
tending to turn red;  
fruit green.

June 23 - ~~mase, date~~  
 steep slope ( $45^{\circ} \pm$ ) of crest  
 covered by a mixture  
 of grass and low brush.  
 The grass is a mixture  
 of *Imperata*, small  
*Andropogon* (?), *Paspalum*,  
 etc. *Spheralcea elongata*  
 Brush as  
 a *Osbeckia* o *Psidium*  
 o *Rhodomyrtus* o *Symplocos*  
 p, c *Eurya* spp.  
 c *Ficus* sp.  
 ea., c *Pinus* (seedlings)  
 o *Glochidion*  
 o *Mallotus*  
 much *Nephrolepis exaltata*  
 c *Dianella ensifolia*  
 f *Elephantopus mollis*  
 f *Eupatorium* sp.  
 f, (a) *Ligustrum*  
 some c *Rubus* (small sp.)  
 ~ *Bidens pilosa*  
 ~ *Commelinaceae*  
 ~ *Adiantum* sp.  
 c ea *Thelypteris* sp.  
 ~ *Wahlenbergia*  
 ~ *Imbristylis*  
 ~ *Ernilia sonchifolia*  
 c *Molophil. or Lyth.*  
 o *Lespedeza cuneata*

Some colonies of *Gleichenia linearis* on steep places.

Toward the top of the  
 ridge *Symplocos*  
 becomes abundant and  
 very near the top *Vaccinium*  
 appears in some number.  
*Thelypteris* is very  
 abundant at the top,  
 some *Andropogon*, much  
*Eupatorium*.  
*Miscanthus* is scattered  
 on top, especially in  
 edges of brush.

The east slope is  
 densely brush-covered,  
 the brush coming up  
 to a sharp line at the  
 crest. A few larger  
 pines on the ~~so~~ crest, many  
 saplings locally.

The scrub on the north  
 slope is mixed in compo-  
 sition:

|                    |                    |
|--------------------|--------------------|
| <i>Raphiolepis</i> | <i>Eugenia</i>     |
| <i>Eurya</i>       | <i>Pittosporum</i> |
| <i>Vaccinium</i>   | <i>Randia</i>      |
| <i>Mallotus</i>    | <i>Adisia</i>      |
| <i>Symplocos</i>   | <i>Flex</i>        |
| <i>Distaplium</i>  | <i>Ficus</i> spp.  |
| <i>Celastr.</i>    | <i>Psychotria</i>  |
| <i>Dendropanax</i> | <i>Wendlandia</i>  |

This scrub is a dwarf forest about 3-4 m. tall, of very slender stems mostly under 1 cm. thick, some larger, mostly in clumps as though ~~to~~ groups of stumps sprouts. A very few shrubs - *Psychotria*. Sparse ground cover of ferns (*Polystichum*, *Pteris*, etc.) and seedlings. Small *Asplenium* often on chert boulders.

Some vines - *Asclepiads*, *Smilax*.

Scattered tufts of a broad leaved grass, *stevia*.

Slopes below summit <sup>most</sup> west side are thickly covered by a mixture of *Miscanthus* and such shrubs as *Juniper*, *Rhus*, *Flex*, *Lymplocos*, *Psidium* and seedling pines, with a few scattered larger pines. Much *Smilax* and several other vines.

*Pandanus* in tangled scrub in shallow ravine on west slope almost to top of ridge at saddle.

(164)

(166)

At the foot of the hill is a band of dense *Acacia confusa* with chinks filled by *Miscanthus*. Very little undergrowth or ground cover, but some *Smilax* vines.

(167)

Below this, on flattish ground, just above the paddy fields is a solid stand of *Parapalum conjugatum*.

(165)

This scrub is a dwarf forest, about 3-4 m. tall, of erect slender stems mostly under 4 cm. thick some larger, mostly in clumps or though bunches of stumpy sprouts.

Almost ground layer very sparse + scattered ferns (*Polystichum*, etc.) and seedlings.

June 23 - Massie Lake,  
summit ridge

in open brush and grass

37699 *Canavalia microcarpa*  
" rare, climbing in bushes  
37700 *Aeginetia indica* L.  
" rare on open bits of soil

2 01 *Hypericum japonicum* Thunb.  
very local in thin places in grass  
2 02 (ad.) *Fagara xitida* Pohl. (= *Zanthoxylum xitidum*)  
common locally  
2 03 (pres.) *Sassafras indicum* (L.) Chav.  
occasional

8

185 m

vine; flowers rose pink,  
fruits somewhat inflated.  
40 700 leafless, from mass of  
fleshy roots on the bottom  
of a thickened stem or caudex;  
stem ~~smooth~~ and spathe  
bronze, striped with purple  
corolla white, slightly  
purplish toward base, lobes  
deep purple.  
1 erect, flowers orange-yellow.  
2 scandent shrub;  
fruits somewhat immature,  
aromatic when crushed.

det. A. B. Love

188

1956 Ryukyu Is.

June 23 - same - in  
edges of dwarf forest

37704 ~~as above~~ *Ardisia effusa* (H. & A.) Drue  
climbing in trees

5 05 *Eurycoma longifolia* Maxim  
common

✓ 06 *Randia formosana* Ternstro  
rare *Lyonia lucidula* Willd.

5 07 *Vitis rotundifolia*  
common, climbing in trees

⑩ June 23 - Massigatake,  
south slopes

5 08 *Mussaenda* *parviflora* Miq.  
in acacia thicket

✓ 09 *Rhodomyrtus tomentosa*  
occasional on slope

5 10 *Eupatorium* *quasitripartitum* (Hegi)  
common *quasitripartitum*

180 m.

189

woody vine.

shrub 2 m. tall; fruit  
immature.

shrub 1.5 m. tall, flowers  
white.

vine; petals marrow,  
bronze in center of lobes,  
corolla white.

100 m. 08 scandent shrub,  
twining in shrubs,  
flowers yellow;  
fruit immature.

140 m. 09 shrub 1 m. tall

150 m. 11 erect suffrutescent  
herb; flowers pale lavender,  
honey-scented.

Kitan.

May 24.

Schist outcrops in  
*Imperata* pasture -  
*Andropogon* spp.  
*Lilium longifolium*  
*Cespedeza cuneata*  
*Borreria*  
*Oxalis corniculata*  
*fetaria*  
*Wahlenbergia*  
*Artemisia*  
*Rubus*  
*Ivyodium*  
*Lactuca*  
*Psidium*  
*Gentella*  
*Phaseolus*  
*Urania*  
*Gymnura*  
*Cyperus* spp.  
*Panicum*  
*Fimbristylis*  
*Imperata*  
*Emilia sonchifolia*  
*Ficus erecta*  
*Ficus retusa*  
*Morus*  
*Carmona*

May 24 - Togata

Patches of Eocene  
 and post Eocene  
 limestone covered by  
 a bushy forest of  
*Pipturus*, *Ficus*,  
*Macaranga*, *Cladodendron*,  
*Melia*, *Whittaya*,  
 with *Alocasia*  
 around edges.

Cultivated patches  
 of beach deposit soil  
 (Shirog?) - sugar  
 cane, sweet potatoes,  
 lesaine, etc.



June 24 - same -  
on slight exposure in  
grassy pasture

37720 *Andropogon* <sup>*Andropogon* (Pursh) C.</sup>  
4 occasional

2 21 *Scleria* <sup>*Scleria* (L.) Willd. (= *S. heterolepis* Nees)</sup>  
rare

2 22 *Fimbristylis* <sup>*Fimbristylis* (L.) Willd.</sup>  
rare

1 23 *Euphorbia* <sup>*Euphorbia parviflora* (Nels.) Harv.</sup>  
occasional

2 24 *Mitchella* <sup>*Mitchella repens* (L.) Gray</sup>  
occasional

1 25 *Borodinia* <sup>*Borodinia* (L.) Willd.</sup>  
rare

2 26 *Panicum* <sup>*Panicum capillare* (L.) Willd.</sup>  
common

50"

↓

Dr. A. <sup>July 1st</sup>  
*Tortilia* (Presl) A. Camus, but very uncertain. Infloresc.  
size, abnormal.

23 erect, flowers white.

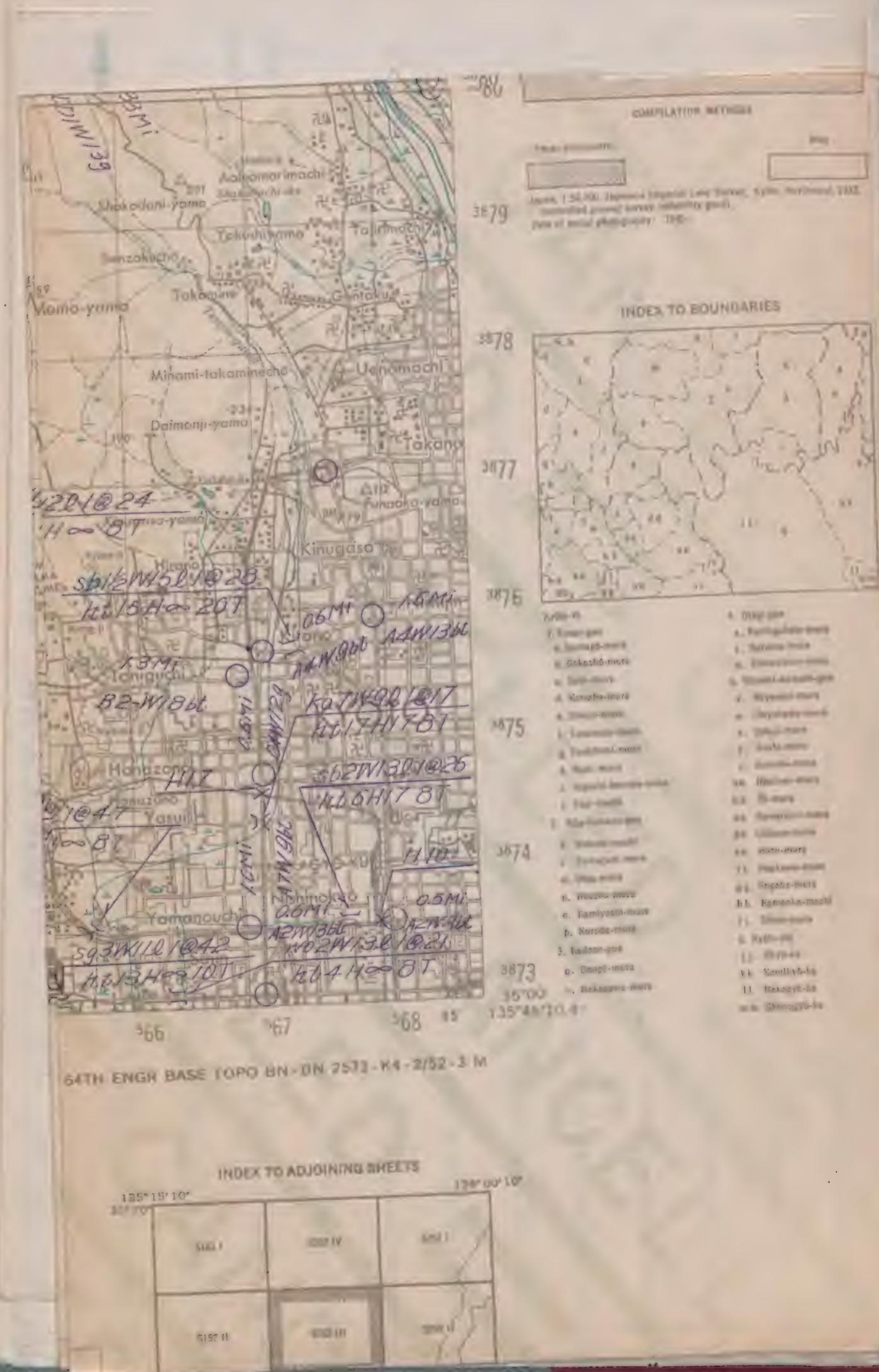
24 flowers white

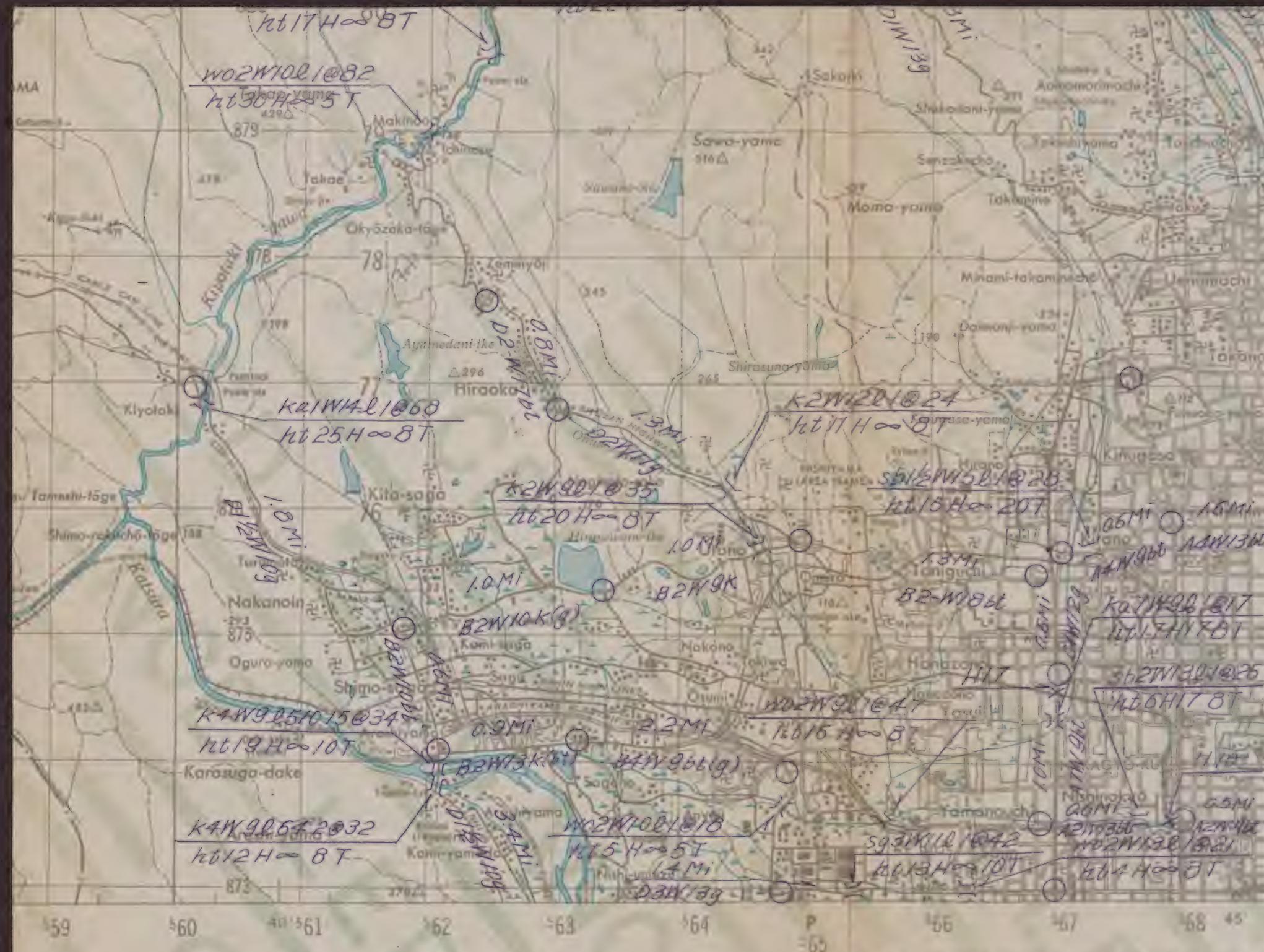
50"

*Grindelia*  
A. stage

196

197





—La Fleur et l'Or 1

1000 1000

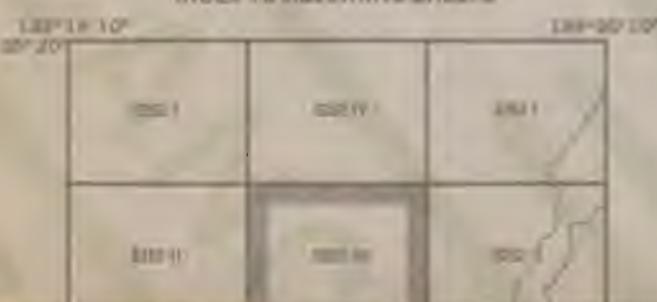
### reduces the incidence rate



1. **Anti-gut**  
 a. *Immunotherapy*  
 b. *Antibiotic-mono*  
 c. *Anti-CD20*  
 2. **Neurodegenerative**  
 a. *Anticholinesterase*  
 b. *Thiamine-therap*  
 3. **Endocrine**  
 a. *Anti-diabetes*  
 b. *Anti-hypertension*  
 4. **Anti-cancer**  
 a. *Immunotherapy*  
 b. *Anticancer-drug*  
 c. *Anticancer-drug*  
 d. *Anticancer-drug*  
 e. *Anticancer-drug*  
 f. *Anticancer-drug*  
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 x. *Anticancer-drug*  
 y. *Anticancer-drug*  
 z. *Anticancer-drug*

68TH ENGR BASE TOPO BN-BN 2573-K4-2332-1 M

### INSTRUCTIONS FOR SUBMITTING SHEET



ONTOURS

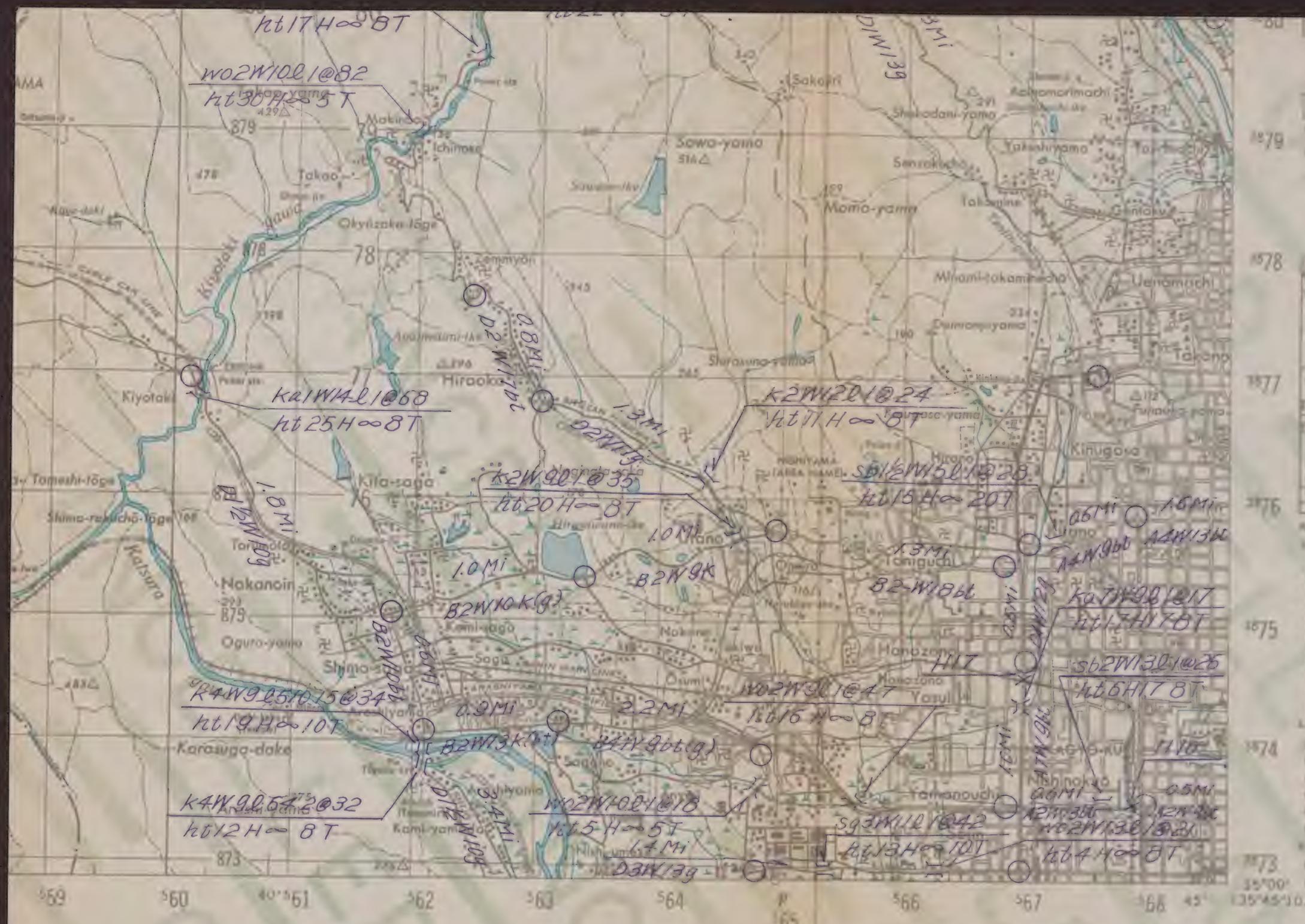
TER UNIVERSAL  
EL SPHEROID

EDID 2019-01-27 10:00

28 June 1956. AM

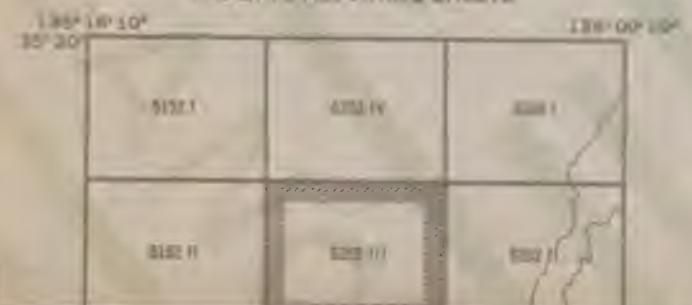
Eocene Limestone!

*Mallotus moluccanus*, *Ficus erecta*, *F. superba* var. *japonica*,  
*F. ribbed fruit*; *Alocasia cucullata*; *Smilax* sp.; *Moraz australis*,  
*Garcinia spicata*; *Bischofia javanica*, *Stictocardia*  
*Tiliacefolia*; *Macaranga tanarius*; *Mallotus moluccanus*,  
*Broussonetia papyrifera*; *Rhus succedanea*, *Ardisia*  
*Sieboldii*; *Microlepia* sp., *Arenga engleri*, *Fagaria indica* (?),  
*Dracaena maritima*; *Smilax*; *Murraya paniculata*,  
*Peperomia* sp., *Rhaphidophis liukiuensis*, *Premna obtusifolia*,  
*Hernandia peltata*, *Eheria chrysiflora*, *Asplenium nidus*,  
*Ptilosporum tubira*; *Calliandra japonica*, *Hoya carnosa*,



64TH ENGR BASE TOPO BN - BN 2573 - M4 - 2/52 - 3 N

INDEX TO ADJOINING SHEETS



28 June 1956 Afternoon.

Éocene limestone:

*Mallotus paniculatus*; *M. moluccanus*;  
*Pisonia umbellifera*; *Ficus erecta*; *F. superba* var. *japonica*;  
*F. retusa* var. *brizida*; *F. "ribbed fruit"*; *Smilax* sp.;  
*Alocasia cucullata*; *Colocasia* sp.; *Monstera deliciosa*;  
*Diospyros morrisiana*; *D. japonica*; *Hoya carnosa*;  
*Arenga engleri*; *Pteris* sp.; *Asplenium* sp.; *Asplenium nidus* (*Neottopteris nidus*); *Nephrolepis cordifolia*;  
*Lycopodium scandens* var. *microphyllum*; *L. flexuosum*;  
*Piper* sp.; *Peperomia japonica*; *Fagaria indica*(?);  
*Pittosporum Tobira*; *Psychotria seyvers*; *Glycosmis pentaphylla*;  
*Taynattia japonica* (not in Flora Okinawa); *Callicarpa japonica*;  
*Zanthoxylum acanthocladum*; *Toddalia asiatica*;  
*Murraya paniculata*; *Fraxinus griffithii*; *Preynea rhomboides*;  
*Sodium* sp.; *Phyllanthus* sp.; *Morus australis*; *Hibiscus* sp.;  
*Elaeocarpus*; *Bucida buceras*; *Rhus succedanea*; *Carmona retusa*;  
*Pueraria tonkinensis*; *Quercus myrsinifolia*; *Cudrania cochinchinensis*

*Callicarpa dichotoma* (Lam.) K. Koch  
38552

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*C. innotata* Masam. 37191;  
37289 ✓

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*C. japonica* Thunb. ✓  
38407, 38315, 38546, 38180.

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*C. japonica* var. *luxurians* Retz.  
37869, 38067, 38298,  
37763, 37857, 37066

det. Moldenke

H.N.

Determinations by E. H. Walker,  
Book 45

ohbana make slips

(4) ✓ 37028 *Securinega flueggoides* M.-A.  
✓ 37160 *Sarcandra glabra* (Thunb.) Nakai  
✓ 37192 *Gymnosphaera podophylla* (Hook.) Copel. det C. V. Morton  
37211 ✓ *Castanopsis* ~~max~~ *cuspidata* (Thunb.) Schott  
✓ 37225 50 *Carcandra glabra* (Thunb.) Nakai  
✓ 37256 *Alchornea trewioides* M.-A. (var. *formosana* Pax?) (not *Mallotus* as previously reported).

ohbana  
annotati

(1)  
"U)"

36976 *Spiranthes stylitis* Zoll.  
36994 *Tarennia gyokushinkwa* Ohwi (not *Randia cochinchinensis*)  
✓ 37011 *Smilax* (Heterosmilax?)  
✓ 37019 *Canavalia* sp.  
✓ 37170 *Spathoglottis* <sup>l</sup>*picata* Bl.  
✓ 37239 *Calanthe fauriei* Schl.  
37285 *Stereosandra javanica* Bl. det. L. A. Garay

add a label ✓ 36990 *Lygodium microstachyllum* var. *glabrescens* Nakai

make slips ✓ 37071 " "

✓ 37148 *Ficus benguetensis* Merr.

✓ 37214 *Elaeocarpus sylvestris* var. *ellipticas* (Thunb.) Hara

✓ 38050 *Neolitsea ohbana* Koidz. det. C. K. Allen

✓ 37822a *Eleocharis ochrostachys* Steud. det. H. K. Svenson

